EUROPEAN UNIVERSITY INSTITUTE
Department of Political and Social Sciences

Governance of online creation communities: Provision of infrastructure for the building of digital commons

Mayo Fuster Morell

Thesis submitted for assessment with a view to obtaining the degree of
Doctor of Political and Social Sciences of the European University Institute

Examining Board:

Prof. Donatella della Porta, European University Institute
Prof. Giovanni Sartor, European University Institute
Prof. Bruce Bimber, University of California, Santa Barbara
Prof. Joan Subirats, Autonomous University of Barcelona

© Mayo Fuster Morell, 2010. Licensed under a
Creative Commons Attribution-Noncommercial-Share
Alike license.

Research Website

http://www.onlinecreation.info

Abstract

This doctoral research is framed by the notion of a transition in which distinct commons organizational forms are gaining in importance at a time when the institutional principles of the nation state are in a state of profound crisis, and those of the private market are undergoing dramatic change. Additionally, the transformation of industrial society into a knowledge-based one is raising the importance of knowledge management, regulation and creation.

This doctoral research addresses collective action for knowledge-making in the digital era from a double perspective of organizational and political conflict through the case of global online creation communities. From the organizational perspective, it provides an empirically grounded description of the organizational characteristics of emerging collective action. The research challenges previous literature by questioning the neutrality of infrastructure for collective action and demonstrating that infrastructure governance shapes collective action. Importantly, the research provides an empirical explanation of the organizational strategies most likely to succeed in creating large-scale collective action in terms of the size of participation and complexity of collaboration. From the political conflict perspective, this research maps the diverse models of governance of knowledge-making processes, addresses how these are embedded in each model of governance, and suggests a set of dimensions of democratic quality adapted to these forms. Importantly, it provides an empirically grounded characterization of two conflicting logics present in the conditions for collective action in the digital era: a commons *versus* a corporate logic of collective action. Additionally, the research sheds lights on the emerging free culture and access to knowledge movement as a sign of this conflict.

In hypothesizing that the emerging forms of collective action are able to increase in terms of both participation and complexity while maintaining democratic principles, this research challenges Olson's assertion that formal organizations tend to overcome collective action dilemmas more easily, and challenges the classical statements of Weber and Michels that as organizations grow in size and complexity, they tend to create bureaucratic forms and oligarchies. This research concludes that online creation communities are able to increase in complexity while maintaining democratic principles. Additionally, in the light of this research, the emerging collective action forms are better characterized as hybrid ecosystems which succeed by networking and combining several components, each with differens degrees of formalization and organizational and democratic logics.

Acknowledgements

I would like to thank first of all Prof. Donatella della Porta, who was more than a supervisor, a reference for me in the intellectual, organizational, moral and personal level. I feel great gratitude to her, first for selecting me and my research project to enter at the European University Institute (EUI), and then, for her wise and warm company in the years of developing this Phd research. I thank her for her "trusting supervision": always being there calm, natural, sunny, and responding promptly to my requests, but at the same time smoothly and respectfully leaving the decisions and the search ultimately to me. I would like also to thank the company and support of the big family around Prof. Donatella della Porta at the EUI. The community of social movement specialists that she creates is of great value. In particular, I want to thank, Massimiliano Andretta, Lorenzo Mosca (for his key help and encouragement when applying to the EUI), Alice Mattini, Stefania Milan, Nicola Doerr, Szabina Kerényi, Manuela Caiani, Daniela Piccio, Javier Alcalde, Andrea Calderaro, Federico Rossi, Grzegorz Piotrowski, Sophie Bossy, Matteo Cernison, Catriona Roberts, Herbert Reiter, Mario Pianta, Davide Calenda, among many others. They have not only been a referential source to this research, but have also become friends, for all of them I feel joy and gratitude.

I thank also my Jury for the company, suggestions and comments for the improvement of this thesis; but also for being *special* in doing so. I thank Prof. Giovanni Sartor for sharing and transmitting me his enthusiasm and passion for the research issue. I thank Prof. Bruce Bimber for his attentive and deep sensibility, for his *feminism in practice*, for his generous interest into my research. I thank Prof. Joan Subirats, for his long-term support, for treating me with closeness and availability, and for his example in how to be a committed scholar.

I thank Prof. Yochai Benkler (Berkman Center of Internet and Society, Harvard) for being an intellectual inspiration, for surprising me with his political commitment, and for his time and interest in discussing my research.

I thank the School of Information at the University of California at Berkeley for hosting me as a visiting researcher (from July to December 2008), particularly to Prof. Coye Cheshire for sponsoring me and welcoming me as a friend, Prof. Paul Duguid for his thoughtful questions and suggestions, and to the Dean AnnaLee Saxenian for her promotion of my research. I thank my colleges Carol Marie Kiriakos and Primavera di Filippi for sharing with me the experience of Berkeley and for their emotional support. I also thank Howard Rheingold, for many things, but particularly for giving me the opportunity to experiment with him on how to *teach in practice* what a *virtual* community is and with the privileged resources of the technological classrooms at the Standford University. From Standford University, I also thank Prof. Fred Turner, for his brilliant work which helps me to understand the cultural roots of the online communities, his generosity and interest in my research. I also thank Prof. Siobhan O'Mahony (University of Boston) for her suggestions; and Mako Benjamin Hill (MIT) for our shared research and action paths and his friendship. I thank Professors Dorothy Kidd and David Silver (University of San Francisco), Lance

Benneth (University of Washington), Jerry Feldman (UC Berkeley), Gabriella Coleman (New York University), Charlotte Ryan (University of Boston), Dieter Ruth (Free University of Berlin) and Eva Anduiza (University Autonoma of Barcelona) for their complicity, advice and support.

From the EUI, I also thank Prof. Rikard Stankiewicz and Prof. Michael Keating for supporting my candidature to the EUI, and for their advice. I thank Prof. Alessandro Pizzorno for his interest and his happiness reactions with my thesis. I thank Clara Portela, Cecilia Tossounian (for the *June paper* walk & talk therapy!), Xema Lanzarote, Eliot Parra, Andres Delgado, Alessandra Vannini, Joan Balcells, Natalia Maillard, Sergi Pardos, and the whole *Spanish-language crew* at the EUI, and to altruistic Horton – trainer, Anna Bara; they have play a great role in giving me emotional support and encouragement in developing this research. I also thank Eva Breivik and Monika Rzemieniecka for their procedural assistance and for organizing the thesis defense.

I thank the patience of the English copy-editors, particularly of Nicola Owtram, Joel Hidalgo, Liz Hauck and Louisa Park; and I thank Lorenzo di Tomassi and Marco Buttarini for their generosity in developing and designing the beautiful research website (http://www.onlinecreation.info). I also thank to the community of developers of Ubuntu, Open Office, World Press, Zotero, and Firefox; technological tools that had support this research. Also thank to Igor Sosa Mayor for the numerous occasions that he had helped me on dealing with those tools, always great and happy opportunities to enjoy his great humor. I thank Nicola Pensiero for helping me with the statistical analysis of the research.

I thank to the members of Networked Politics collaborative research. Our mutual work and collaboration fed this research. I particularly thank the support and charming of Hilary Wainwright, an example of determination; my recognition of her fidelity to optimism and her rebellion against predefine ideas that might limit her will and fantasy. I also thank Christophe Aguiton, for his clever remarks and intuitions for the development of this research, but also for our long time collaboration in building and *networking* movements. I thank Felix Stalder, for his intelligent insights, and his interest. I thank Peter Waterman for his persisting enthusiasm with my work, and Luciana Castellina for her humoristic critic of my Internet fascination after asking her to explain: *How was politics before the Internet?*. I thank Ida Dominiani for her generous sympathy. I thank Lawrence Cox for his support and guiding in exploring the field of action research. I thank Carlo Formenti for being a critical referential source to approach the new technologies of information. I thank David Bollier for his guideline in the commoners land, and David Harris in the Silicon Valley.

I thank to my colleges of techno-political experiments at the Social forum memory project and Communication Commission of the International Council of the World Social Forum. I thank Simona Levi, for her courageous partnership in building the Free culture and digital rights forum. I specially thank her for her patience while writing up the dissertation. The Fcforum has been a source of hope and of happiness for me, as one of the multiple signs of the emergence of the Free culture movement, and a privileged process to share and put into practices the results of this research.

I also thank the numerous informants of the research (listed in Annex II) for their time and knowledge, particularly the generosity of Jimmy Wales. I commit to share the research results with them.

I thank the support and love of my big family. I thank the sweet love of my grand father Juan Morell and my grand mother Rosa Gregori, they have been my first source of inspiration to come to the EUI, their adventurous lives fed my fantasy about going to Europe. I thank my mother Genoveva Morell for taking care of me, supporting my studies and pointing me to the happiness behind social (and personally liberating) movements, I thank my father Jose Fuster for his encouragement and his example of self-improvement. With my parents I had the first opportunity to learn the value and richness of finding hybrid solutions. I thank my sister, Alba (I enjoyed creativity for the first time conceiving surprises for her) for her support and comfort during the more difficult periods of writing this thesis, and for being an example of courage. I thank, with a smile, my *amatxu*, Marian Marculeta, for her encouragement, care, observations about me and the humor of her continuous surprise that I could keep thinking on the same research question for so long. I thank Luigi Manconi for his understanding and advice, and Letizia Laurenti, her reactions and comments helped me to see this research in the glasses of the second war political generation. I thank Mariel Vilella for her friendship and care doing this thesis. I thank Lorena Fuster, for being more than a truly cousin, for sharing the experience of doing a Phd, and being a reference of support in the more painful moments. Luckily, those that told me: *"Mayo! Don't study so much that none is going to want you"* were wrong. Marco Berlinguer, the closest person to me in doing this project at all levels, an intellectual, activist, adventurer, and life partner. For his encouragement, support, determination and believe on me, and his moral guideline, I thank you Marco for so much.

Finally, I did this research for political reasons. Before starting this research I was focused on movement organizing in the frame of the Global Justice Movement. However, I felt the necessity to question myself, to reflect and understand the strains, but importantly the limitations of our organizational strategies and perspectives, to approach what could be learned politically from the surprises (and frustrations) that the collective action online was toughing out. At that time, I was developing techno-political tools for supporting social movements (with my dear friends Victor Guillamon and Enric Duran) and I couldn't understand why in some cases a community emerged and why in others (particularly those linked to the Social forums) did not, and, importantly, to me it was not clear enough the horizon of political transformation framing our actions. I thank the EUI to give me the opportunity to start and develop this research and all the above for helping me in arriving to its end. I hope I have contributed in throwing light (at least open some lines of further reflection) to the improvement the strategy of the movements for more justice and solidarian world: at least, I can say that doing this research has changed and deep my political agenda and strategy.

Mayo Fuster Morell, Il Laghino (Fiesole), 22 of August 2010

I dedicate this thesis to the commoners

Index

I. Introduction: Researching online creation communities in times of institutional crisis……..……1
II The emergence of a free culture movement in defense of digital commons: An introductory historical contextualization of online creation communities ……..…….13
III. Theoretical framework: Previous research on collective action in the digital era ……..29
IV. Methodology ……...49
V. Mapping models of infrastructure governance for collective action and their effects on participation size, collaboration and community self-governance - Large *N* analysis……...71
VI. Participation in online creation communities' platforms……..…...113
VII. The autonomous representational foundation infrastructure provision - The Wikipedia case study……..141
VIII. The assemblarian self-provision - The social forums case study……175
IX. The commercial infrastructure provision – Corporation service and mission enterprise. The Flickr and Wikihow case studies……..……205
X. Commons logic *versus* corporate logic - Case studies comparison……...233
XI. Power relationships embedded in infrastructure governance: Providers *versus* community....257
XII. Conclusions ……..267
XIII. Bibliographic references ……291

Annexes

I. Codebook for the large *N* data collection ……...327
II. Documentation of Empirical Material: Material per OCCs case studies……345
III. Codebook participation analysis openesf.net……...359
IV. Review of the web analysis of non-conventional political actors in the light of the literature on quality of democracy……365

List of tables and figures

Tables

Table I.	Models and cases	58
Table II.	Case studies and size, collaboration and self-governance	58
Table III.	Dimensions used in the research in contrast to previous studies	74
Table IV.	Matrix of correlations dimensions of democratic quality	83
Table V.	Ranking of democratic quality	90
Table VI.	Ranking of Infrastructure governance models effects on size 2010	96
Table VII.	Correlation size by time	98
Table VIII.	Infrastructure models and cooperativeness	104
Table IX.	Ranking of models of infrastructure governance in community self-governance	106
Table X.	Correlation infrastructure governance axes and community self-governance	107
Table XI.	Matrix size, collaboration and community self-governance	108
Table XII.	Ranking models in term of size, collaboration and community governance	109
Table XIII.	Distribution of function, authority and ownership among community and provider at commons logic versus corporate logic	262

Figures

Figure I.	Analytical process	9
Figure II.	Dimensions and sub-dimensions of democratic quality in OCCs	73
Figure III.	Models across axes of infrastructure governance	85
Figure IV.	Distribution of the sample and the models across axes of infrastructure governance	88
Figure V.	Distribution of models of infrastructure governance	89
Figure VI.	Distribution year of foundation	97
Figure VII.	Distribution type of collaboration	102
Figure VIII.	Type of overlap drafted at the interviews	165

Abbreviations

CBPP: Common-based peer production

EPA: European Preparatory Meeting

FCM: Free Culture Movement

FLOSS: Free/Libre and Open Source Software

GJM: Global Justice Movement

NTIs: New technologies of Information

Chapter I

Introduction:

Researching online creation communities in times of institutional crisis

This research is framed by the notion of a transition in which distinct organizational and democratic logics are emerging just as the institutional principles of the nation state are in a state of profound crisis, and those of the private market are undergoing dramatic change. Networks (Castells, 2001; Powell, 1990), commons (Ostrom, 1990) or commons-based peer production (Benkler, 2006) are forms which are challenging the organizational logic of the firm (such as the example of the state) and the market as resource producers and managers.

Crisis in the institutionalization of democracy and the economy

Political and economic globalization creates important challenges for democratic governance, as much for inputs as for outputs (della Porta, 2005a). Firstly, economic internationalization and the construction of supranational structures of government such as the European Union move citizens away from the process of direct decision-making. The latter tends to be transferred to more distant or opaque institutions, which raises doubts as to the capacity of democratic control over decisions, a capacity which traditionally resided within parliaments. Secondly, nation-state institutions of government have undergone far-reaching changes (economic, political and cultural), due to the emergence of new demands and a greater plurality of actors with influence, institutional as well as non-institutional (della Porta & Tarrow, 2004). Parallel to the process of globalization is a process of increasing regionalization and localization of policy (Subirats, Brugué & Gomà, 2002). New networks of multilevel interchange are emerging, in which new supranational organs take part as much as sub-national organizations.

The decline in the parliamentary power of decision making outlined above has been accompanied by the decline of political parties' ability to channel social demands. As a result, electoral and conventional participation has decreased in the last few decades in most industrial countries (Blais, 2000; Caul & Gray, 2000; Lane & Ersson, 1999; Wattenberg, 2002). Furthermore, several studies have noted an increase in citizens' discontent towards the mechanisms and institutions of representative democracy (Dalton & Wattenberg, 2000; Norris, 1999; Pharr & Putnam, 2000).

At the same time, the economic system is in a period of crisis. From the mid-1970s onwards, a transformation of capitalism from the hierarchical Fordist structure of work into a new network-based form of organization has taken place. This transformation involved the move from hierarchically organised *factories,* mass producing standardized products, to the externalization of various stages of the production process and the formation of large networks producing highly customized goods and services (Castells, 2001). In Chiapello and Boltanski's view (2005), the new

spirit of capitalism is found in the incorporation of the May 1968 critique on the alienation of everyday life into capitalism and bureaucracy. Work is based on employee initiatives and relative autonomy, albeit at the cost of material and psychological security. In this context, a new economy based on the provision of services for information access and sharing has gained in importance. Additionally, with the diffusion of NTI as means of creation, the creation of value has expanded from the economic sphere in a strict sense to society at large.

In parallel, the **institutionalization of knowledge** and the types of public space linked to representative democracy are undergoing a transformation. The university, until now the institutional safeguard of knowledge, is in a twofold crisis (Santos, 2004). On the one hand, the merchandising of knowledge is translated into hyper-private pressure. On the other, the university is under hyper-public pressure. In Santos' terms, hyper-public pressure is the result of the development of new forms of knowledge that *"break the public space of the University in the name of ampler public space"*. *"The university was created following a model of unilateral relations with the society and this is the model that underlies its present institutionality"*. The new forms of organizing knowledge "*replace the unilaterality with interactivity. This interactivity is enormously harnessed by the revolution in information and communication technologies"* (Santos, 2004, p. 19).

Changes have also occurred in the fields of **public space and the media**. The private commercialization of the mass media has reduced its capacity to represent spaces for public debate (della Porta, 2005a). The mass media's role as intermediary for public expression has reduced with the increase in accessibility to public expression via the Internet. The Internet's impact on public space is resulting in an increase of activities developed in public, the formation of "networked publics", and the blurring of borders between public and private (Bimber, Flanagin & Stohl, 2005; boyd, 2008).[1]

From the perspective of the evolution of democracy, it could be argued that the above presented changes suggest that the representative democratic system is entering a process of turbulence and readjustment. Some authors also argue, however, that the crises of conventional forms of participation create resources for new forms of participation (Norris, 2002). In fact, the crisis of participation in conventional politics has been accompanied by an increase in non-conventional forms of participation and public expression (Cain, Dalton & Scarrow, 2003; Norris, 2002). In a context of crisis of the institutionalization of representative democracy, non-conventional forms of participation, including social movements, constitute both a sign of the crisis and a possible exit from it. Among these, the Global Justice Movement (GJM) rejects neo-liberalism and claims that *"another world is possible"* (della Porta, 2009). The GJM showed the ability to organize major mobilizations in history (February 2003 against the Iraq war) and has lasted for over a decade since 1999. But the goal of the GJM goes beyond temporary protest mobilizations to impact on institutional politics; it *also* aims to perform the "new" politics, developing the organizational and democratic logics desired for the political system and self-organizing

[1] The author danah boyd spells her surname without capital letters.

citizens to solve needs that current political institutional forms do not satisfy. From a similar perspective, the Free Culture Movement (FCM) brings together the pro-public approach to the Internet, and is able to sustain the production of elaborate digital public goods over time. In other words, the experiences of both contemporary movements, the GJM and the FCM, are contributing to expanding the idea of the provision of public goods by citizen-based non-state forms.

Along these lines, one possible transformation is the development of representative democracy into a more participative form of democracy which privileges access to participation and citizen empowerment (della Porta, 2009). This is being put into practice in several places, particularly in Europe and Latin America. Furthermore, there is renewed recognition and increased interest in the commons among researchers and in different social contexts. The Novel Prize awarded to Elinor Ostrom in 2009 is a sign of it. While Castells emphasizes the emerging network form (Castells, 2000), other authors go beyond this and argue the emergence of the commons paradigm as a distinctive form different from the command format of the state and the price law of the market (Benkler, 2006; Powell, 1990).

Commons: An emerging approach

Traditionally state and market organizational forms were predominant when thinking of the administration and production of resources. Commons or communal property refers to a range of solutions that has increased in importance in recent years and which have some distinctive characteristics in contrast to the hierarchical firm and market (Benkler, 2006; Ostrom, 1990; Powell, 1990).

Commons are social-cultural and juridical systems of property and the administration of shared resources. The commons approach tends to highlight a combination of several features, which include: more distributed and networked forms of property and organization; direct involvement of actors; orientation to the preservation of resources in the long term; expanding the idea of wealth (considering a broader idea of value than the market price) (Bollier, 2008). Depending on the author, the approach to the commons is more focused on the property system or the social “community” system generated around it.

The myth of the “tragedy of the communal properties” is routinely invoked to discredit the idea of communal property. For decades (classical and neoliberal) economists have claimed that any shared management system would inevitably result in a “tragedy of the commons”. This myth was popularized by the ecologist Garrett Hardin in his famous essay of 1968, in which he presented the idea that people who share land inevitably over exploit it, through the example of a common pasture. In Hardin's line, when a farmer can obtain benefits from common resources without considering his “general sustenance capacity”, then the shared resources will necessarily go to ruin (Hardin, 1968).

In support of this general conclusion, economists usually mention game theory experiments or the “prisoner's dilemma”, that demonstrate the difficulties involved in inducing individuals to cooperate in order to solve common problems. In this line, in his influential essay of 1965, the economist Mancur Olson affirmed that rational individuals with personal interests will not act to obtain their common interests or those of the group (Olson, 1965).

Critics have objected to the tragedy of communal properties as well as to the 'prisoner's dilemma,' accusing them of being unrealistic models (Bollier, 2008). In particular, Hardin is criticized as presenting an example which is not a communal property, but a no-man’s land, a land without governance (Ostrom, 1990).

One of the main determining factors is if in the handling of the communal properties a resource is exhaustible, non-rival and exclusive. With the Internet and low-cost digital reproduction, scarcity of access to information and culture reduces. In contrast, in some conditions, the communal properties of information tend to increase in value as more people use them, a phenomenon that Carol Rose calls the “comedy of the commons” (1994). Under these conditions, the governing of the common resources has less to do with the governing of access to finite resources than with the governing of social processes.

Ostrom’s research on environmental commons showed that, with an appropriate policy, the people can develop governance forms to work together and manage collective wealth (1990). With the label non-traditional commons (Hess & Ostrom, 2007) or new commons (Hess, 2008), these authors refer to an expansion of commons institutional frames to other areas. The commons apply to a wide variety of phenomena. Distinctively, in the global south, commons appear as a form for the defense of indigenous land and natural resources (such as the case of the Amazon, the atmosphere, water and biodiversity). The idea of a commons is also present in social movements against the privatization of fundamental goods such as water or public services (della Porta, personal communication, May 27, 2010). Immaterial resources such as information and knowledge, for example, the public goods created by communities, such as most of the software which runs on the Internet and archives like Wikipedia, a free online encyclopedia, constitute the digital commons. Furthermore, commons is basic to the debate of the governance of complex global infrastructures of communication (including the Internet itself) (Vertola, 2007).

The commons are a traditional institution, especially linked to land and natural resources, present in pre-capitalist societies and still present in the global south. However, the commons approach has recently increased in importance, mainly for four reasons (Bollier, 2008; Helfrich, 2008). A first reason is the development of a global dimension, and therefore the increase in size of the political agenda to a common global frame. Secondly, what is referred to as the “enclosure of the commons”, the neoliberal expansion of market logic into other spheres, privatizing public resources (Boyle, 2003). However, the discourse on commons is not only defensive. It is also connected to innovation. The development of digital technologies, artificial intelligence, robotic science, biotechnology and nanotechnology increase the areas in which humans can intervene

(such as in DNA) and are challenging the forms of governance of these resources. Finally, the csuccess of the free and open source model software (FLOSS) of collaboratively developed software that generates broader economic and social wealth than the proprietary model (Weber, 2004). FLOSS is one of the more visible cases of digital commons.

The **digital commons** are defined in this research view as an *information and knowledge resources that are collectively created and owned or shared between or among a community and that tend to be non-exclusivedible, that is, be (generally freely) available to third parties. Thus, they are oriented to favor use and reuse, rather than to exchange as a commodity. Additionally, the community of people building them can intervene in the governing of their interaction processes and of their shared resources*.

The growing interest in the commons is accompanied by a mobilization for its defense. Several types of movements can be pointed out, such as the climate justice movement in defense of natural resources (Endres, Sprain & Peterson, 2009), or indigenous movements in defense of communal land. For the case of digital commons, a free culture and access to knowledge movement in defense of and for the building of digital commons is emerging. The FCM can be considered part of a larger emerging paradigm around commons (Bollier, 2004). This research is focused on the digital commons case.

A knowledge based society in formation

The increasing importance of knowledge-based markets; the increasing cognitive capacities in the North for the expansion of education at different levels; and rapid technological change, meaning mainly the digital and communication revolution, have led to the transformation of society towards knowledge based wealth (Castells, 2000; Rifkin, 1995). This has been termed by some as the 'postindustrial information society' (Lazzarato, 2005; Moulier-Boutang, Corsani, Lazzarato, Vercellone, Blondeau, Dyer-Witheford, & Kyrou, 2004). Following this characterization, in northern countries, production and trade in immaterial goods – services, culture, information, and knowledge – will continue to gain importance. Therefore, modes of regulating access to knowledge resources, modes of control and appropriation of the production and distribution of knowledge are becoming increasingly more important as well. However, changes in information and knowledge use, exploitation, production and dissemination have created conflicts. This research sheds light on a fundamental conflict in the digital era: a conflict between a corporate logic *versus* a commons logic.

As it will be argued throughout this thesis, these are two logics which frame the direction and conditions of collective action in a digital environment very differently. The commons logic claims free access to information and knowledge, competing with a corporate logic which claims private ownership. A communal ownership of the digital commons is the result of an infrastructure based on commons logic, which clashes with the private individual appropriation of the resulting

resources in a corporate logic. While the first is based on creating a form that supports possibilities to work in order to reinforce creativity, others claim the reinforcement of a copyright frame of intellectual property rights and mobilize against violations as acts of “piracy”. In this conflict, the FCM combines the commons logic with a vision supporting the public interest domain and the concept of common ownership. OCCs for the building of digital commons are one of the more visible expressions of the FCM. Additionally, a contrasting logic between OCCs based on commons logic and OCCs based on corporate logic results from this empirical research.

Research puzzle

In synthesis, the crisis of the institutionalization of democracy has resulted in the increase of unconventional forms of participation, and a commons approach is growing in importance among such forms of participation. Additionally, the transformation of industrial society into a network society of knowledge-based wealth has changed the environment of collective action. On the one hand, the centrality of knowledge in a knowledge-based society results in the rising importance of forms of knowledge management, regulation and creation. This is leading to clashes between several conceptions of knowledge and also over how to profit from the possibilities opened up by NTI. In this regard, a free culture movement which calls for the conditions to create and preserve a digital commons is emerging. On the other hand, the changes in the environment, particularly linked to NTI but in conjunction with other processes, are contributing to reshape collective action in a digital era. The social involves communication, and thus changes in communications effected by NTI could impact on all dimensions of social life. In this regard, NTI have reduced transactional costs, thereby transforming the cost of collective action (Benkler, 2006; Coase, 1937). Some organizational strategies adapt to the current environment; while others are challenged by it (Bimber, 2003). In this line, de Tocqueville ([1840], 1945) stressed the importance of information flows in groups. As information flows become richer, societal interactions increase and become more intense.

In this context, it remains unclear, first, what the organizational characteristics of the new unconventional forms of collective action which have successfully adapted to the environment are, and, second, what their diverse conceptions of knowledge are, and where they differ. In addition, it the role and the forms used to relate to technological infrastructure remain unclear in the emerging forms of collective action supported by technology.

In order to fill the above gap, this doctoral research addresses collective action in the digital era from a double perspective of organizational and political conflict. On the one hand, this research provides an empirically grounded description of the organizational characteristics of the emerging collective action. Particularly, it addresses how the new forms embrace participation and collaboration scaling. Importantly, the research provides an empirical explanation of the organizational strategies which are most likely to succeed in creating large-size collective action in

terms of the dimensions of participation and collaboration. On the other, this research maps the diverse models of governance of knowledge-making processes and suggests a set of dimensions of democratic quality adapted to these forms. Importantly, this research identifies a fundamental conflict in the new environment. It provides an empirically grounded characterization of two conflicting logics present in the conditions for collective action in the digital era: a commons versus corporate logic of collective action.

The empirical research is developed through the case of online creation communities (OCCs) and among them, those of global scale. Online Creation Communities (OCCs) are networks of individuals that communicate, interact and collaborate; in several forms and degrees of participation which are eco-systemically integrated; mainly via a platform of participation on the Internet, on which they depend; and aiming at knowledge-making and sharing.

It might be worth mentioning that in NTI research areas, including this research, the term knowledge is used in a broad sense as information and data elaboration, and does not refer only to scientific knowledge. More concretely, knowledge-making in the framework of this research is defined as *the process of creation and systematization of socially dispersed information and knowledge resources and cognitive capabilities resulting in evolving bodies of shared knowledge*.

A part of the growing socioeconomic importance of forms of knowledge-making and the diverse visions that shape knowledge making, these examples of collective action offer an opportunity to see how various problems of democratic governance evolve and are solved in a digital environment. In other words, they are interesting for what they can tell us about democratization more generally. More concretely, OCCs can help us to analyze **how governance shapes and favors the handling of increases in size and complexity** in a context of the digital revolution and globalization in which the global dimension is larger in scope and the political agenda more complex.

Additionally, OCCs are an interesting collective action forms from two points of view. OCCs are interesting because they constitute spaces for civic engagement through the dissemination of alternative information and for participation in the public sphere which could contribute to enriching public discussion in a representative democracy. OCCs are also interesting from the point of view of the conditions in which citizens engage in the provision of public goods and services based on a *commons* approach that is the provision of public goods not necessarily linked to the state or other conventional political institutions. This can provide insights for the building of institutions in a network society.

Researching OCCs

Some authors agree that if we regard OCCs as collective action, which on some occasions constitutes large performances and produces elaborate outcomes, a number of questions emerge (Eisenhardt & Santos, 2000; Patriotta, 2003; Tsoulkas, 1996). How can complex knowledge-making and sharing take place? How can dispersed activities nevertheless lead to the creation of a

complex product such as software code or an online encyclopaedia? What are the basic mechanisms underlying the coordination of knowledge-making and sharing in OCCs, and where are they embedded? (Lanzara & Morner, 2003, 2006). In addition, in my doctoral research, the governance forms of the OCCs are explored. The analysis is applied to governance structures. OCCs are not analyzed as monolithic units, the contentions and tensions present in OCCs are also considered.

In order to approach OCCs it is useful to make an analytical distinction between two spaces. On the other hand, there is a platform of participation where participants interact and which can grow enormously. On the other, there is a generally small provision body that provides the platform on which the community interacts. For example, the Wikimedia Foundation is the provider of the infrastructure within which the community of participants which build Wikipedia interact. NTIs lower the costs of established forms of collective action. However, they still depend on interaction within an infrastructure. The provision of this infrastructure cannot be seen as a dysfunction or unimportant; instead it solves some of the questions this type of online collective action necessarily raises. For example, platform provision involves the control of servers and the domain name and other important components which sustain the interaction both technically and legally. Previous analyses of OCCs have dedicated little attention to this and infrastructure governance is considered a "backstage" question. In my view, in the analysis of OCCs' governance there is instead a need to look at both spaces (community around the knowledge-making and infrastructure provision) and their particular connections, because both are important and have functions in the governing of OCCs. In conclusion, instead of focusing the analysis of organization and governance of interaction on the community of participants, while ignoring the organization and governance of the provision of the platform, my research puts both the community of participants and infrastructure provision at the center of the analysis.[2]

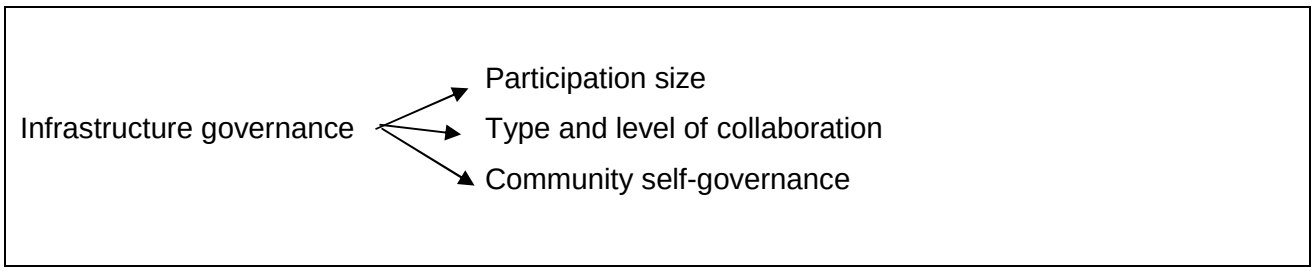
A characteristic of the OCCs that contrasts with previous experiences of collaborative knowledge-making is the high quantitative jump in the number of people involved in the process.[3] Historically, the local and small communities are presented as having better conditions for democratic organization. Local and small communities may develop control over decision-making processes more easily; information may more easily reach all members or participants and increase participation. However, OCCs are participative processes which are able, in some occasions, to engage very large communities and develop very complex outcomes. This bring us

2 For a notorious exception on considering infrastructure governance for the FLOSS case see O'Mahony (2007).

3 Other characteristics that differentiate the OCCs from previous experiences are the overcoming of geographical and territorial borders, facilitating the creation of geographically dispersed communities, going beyond the local level, and, on occasion, representing the global community. According to other authors, the mediation of the Internet in the OCC enormously accelerates the process in comparison to previous experiences (Lanzara & Morner, 2003). Finally, the Internet facilitates an important characteristic of the OCC, which is that aspects of production and distribution are simultaneously juxtaposed. The spreading of the knowledge does not occur after it is produced, after it has become a product, but is spread from the moment that it is developed (Raymond, 2000, 2001).

to the question: how do OCCs organize and govern themselves in order to increase participation and collaboration in the achievement of their goals? The goal of this research is, first, to provide a description of the main organizational characteristics and democratic logics of these new forms of OCCs. Second, this research aims to explain which OCC governance strategies lead to increases in participation, collaboration and community self-governance. In other words, *does infrastructure governance shape the community in terms of participation levels, type and level of collaboration and the possibility of community self-governance? And, which organizational strategies for infrastructure provision lead to an increase in participation, the complexity of collaboration and are based on community self-governance* (see Figure I)?

Figure I: Analytical process



First, I hope to demonstrate that infrastructure governance shapes the community generated. In particular, infrastructure governance shapes the community in terms of size, complexity of collaboration and self-governance of the community. If my expectations are confirmed by the empirical research, the research results will throw light on a major limitation present in the current literature analyzing the democratic quality of political actors' websites (Davis, 1999; della Porta & Mosca, 2005, 2009; De Landtsheer, Krasnoboka, & Neuner, 2001; Navarria, 2007; Norris, 2003; Gibson, Nixon, & Ward, 2003; Römmele, 2003; Sudulich, 2006; Trechsel, Kies, Mendez, & Schmitter, 2003; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2005a, 2005b). My hypothesis on the impact of infrastructure governance in terms of shaping the community also questions the previous literature on the governance of OCCs, which does not consider the role of infrastructure provision (Burke & Kraut, 2008; Ciffolilli, 2003; Kittur, Suh, Pendleton, & Chi, 2007; Kriplean, Beschastnikh, McDonald, & Golder, 2009; Loubser & Pentzold, 2009; O'Neil, 2009; Reagle, 2005, 2007; Stadler & Hirsh, 2002; Tkacz, 2007; Viégas, Wattenberg & Mckeon, 2007b). In concrete, my expectation questions Benkler's (2006) analysis of OCCs by suggesting that all OCCs are common-based forms, independently of their infrastructure governance.

Second, I expect OCCs to be able to increase in participation and address complex agendas while maintaining democratic principles. This implies that OCCs do not confirm Weber's (1946) and Michels' (1962) classical statement that as organizations grew in size and complexity, they tend to create bureaucratic forms and oligarchies, becoming less democratic.

Third, I do not expect that formalization in OCCs will generate larger and more collaborative communities. In other words, OCCs do not confirm Olson's assertion that formal organizations tend to overcome collective action dilemmas more easily (1965).

Organization of the dissertation

The dissertation is organized as follows. Chapter II completes the contextualization of OCCs by providing an **history of their development**. This history presents the cultural roots of the OCCs in the postwar visions of technology of the 1950s and the 1960s-1970s protests and cultural critiques. The chapter differentiates several historical stages in the evolution of the phenomenon up to the present day: from the first OCCs linked to software development in the 1990s, to their expansion to other fields of knowledge and culture, and the more recent rise of a new economic industry of information flow and sharing based around OCCs. This chapter ends with a presentation of the latest developments, which suggest a contextualization of OCCs as an arena for a larger free culture movement. This is a movement which stresses conflict around conceptions of knowledge and conditions for collective action in the digital era.

Chapter III introduces the **theoretical framework** of the research with a review on the state of the art in the literature. Three bodies of literature are particularly significant in this regard. First, the debate on the Internet and democratic organizing within the frame of political sociology and the social science contribution to theoretical framework for the analysis of OCC governance and democratic quality. Second, the debate on collaborative knowledge-making processes in digital settings found in organizational studies (and cyberlaw) contributed to the analyses of OCCs' organizational characteristics. Finally, social movement theory contributed to the focus on the conflict between the main governance logics present in OCCs. Finally, this theoretical framework chapter provides a contextualization of the hypotheses, expanding the argumentation on how my expectations contribute to or challenge previous literature.

Chapter IV argues the main features of the **methodological design**: that is, the triangulation of the large *N* analysis and the case study comparison; the creation of data and the use of "organic" data; the combination of offline and online methods; and, finally, a double perspective, that of the researcher and that of the activist. In addition, detailed documentation and justifications for the large and small *N* analyses are provided. The four annexes also provide prood of the documentation of the empirical research. Finally, the chapter also includes a presentation of the actions taken to ensure the impact of the research within the academic community, civil society, and among policy makers. The following chapters are dedicated to presenting the empirical research itself.

Chapter V addresses the main research question from a quantitative perspective: how infrastructure governance relates to the size, level and type of collaboration and to the self-governance of communities. A **large *N* analysis** is useful for two important exercises. On the one

hand, because OCCs are a recent and under-researched phenomenon, the large *N* analysis helps to describe and map their plurality of forms and to conceptualize their singularity as a form of collective action. More concretely, an overview of the democratic quality and logic of OCCs is facilitated by the large *N* analysis. On the other hand, a large *N* analysis is appropriate in order to test the hypothesis concerning the explanatory part of the research. Both exercises are connected (descriptive and explanatory), as the exploration of democratic quality highlights the importance of infrastructure governance in shaping communities. As a result of the large *N* analysis, the main models of infrastructure governance are described.

While the previous chapter centered on defining models of infrastructure governance and testing how they shaped the communities, Chapter VI addresses the organizational forms of the OCC communities in depth. More concretely, this chapter analyzes the main organizational features and conceptions of **participation** within OCCs, which design the architecture of participation and interaction between the participants. This analysis will help us to better understand how participation grows and how these forms shape the types of collaboration established. The analysis is based on a triangulation of the large *N* study and the comparison of the four cases studies. In addition, in light of this analysis this chapter also introduces how the conception of participation found in OCCs challenges previous approaches to the analysis of participation in collective action.

The following three chapters are centered on the four case studies. Each of the four cases is linked to one of the four main models of infrastructure governance that emerged from the large *N* analysis. The case studies of the OCCs are used to extract a more in-depth understanding of the research question and the specifics of each infrastructure governance model. For the in-depth comparative analysis of the case studies I use a grounded theory methodology in order to understand and analyze the democratic logics and points of quality according to the actors and the OCC forms. Chapter VII presents the case of **Wikipedia**, a free encyclopedia provided by the non-profit Wikimedia Foundation; chapter VIII presents the case of OCCs designed to build the memory of the **social forum** mobilization process based on a self-provision approach; and, finally, chapter IX is dedicated to the two models of infrastructure provision: **Flickr**, a photo-sharing repository provided by Yahoo!, a multinational media corporation, and, **Wikihow**, a how-to manual provided by a mission enterprise.

Chapter X is dedicated to the **comparison of the cases** representing the different models of infrastructure governance. The differences between the cases in terms of infrastructure organizational strategies will be explored. Having acquired a more in-depth understanding of how each case functions, the differences in how infrastructure governance can explain the diverse performances of each of the cases in terms of size, collaboration and community self-governance are addressed. According to the results of this analysis two contrasting logics of infrastructure governance can be distinguished: commons logic *versus* corporation logic.

Chapter XI continues with the case comparison with an analysis of the **power relationships embedded in infrastructure governance**. An exploration of the types of powers and asymmetries in terms of the empowerment of the provider *vis à vis* the community is presented. Importantly, a sharp distinction in power distribution between the commons and corporate logics emerges from this analysis.

Finally, the **concluding** chapter XII summarizes the main findings of the study and argues how they question previous literature. In addition, the findings on OCCs are analyzed in a broader context, looking at society level preconditions and regulations required in order to assure democratic OCCs and the democratic use of the NTIs more generally. Finally, OCCs are posited as a potential source for expanding the political imagination in order to overcome the current crisis of political institutions. In this regard, the lines of applicability and generalizability of OCC organizational characteristics to institutions are presented. The thesis ends by suggesting future lines of research.

Chapter II

The emergence of a free culture movement in defense of digital commons: An introductory historical contextualization of online creation communities

OCCs are embedded in the culture that developed the Internet. In Castells' words: *"The Internet was funded by the Department of defense of USA, but it didn't have a military application. (...) The Internet was founded in 1969, and it was designed, decided and produced on the basis of four cultures, 1) the universitarian meritocracy, 2) the hackers passion to create, 3) the alternative counter culture of the 60s and 70s and the invention of new social forms and dreams of political freedom, and; 4) a culture of business"* (Castells, 2001, p. 37). A set of cultural roots at the base of the OCCs as well as different historical stages can be differentiated.

This chapter provides an introductory historical contextualiisation of OCCs. First, several stages of the historical development of the OCCs will be presented. These start from its early development and cultural roots back in 1950s; continue through the appearance and success of the first OCCs around Free and Open source software development in the 1990s, to the later developments in the first decade of the 21st century, particularly with the explosion of commercial Web 2.0, and the new frontiers of potentiality that are evolving.. Finally the chapter will politically contextualize the OCCs. It will show how the development of OCCs is fuelled by and contributes to, the rise of a free culture movement defending and advocating the creation of digital commons.

II. I. From the 1950s: Cultural roots of OCCs: pioneer online communities

A first cultural origin of OCCs is the hacker culture. The *hacking culture* emerged in the 1950s around the Artificial Intelligence Lab of the Massachusetts Institute of Technology (MIT). The *hacking culture* was based first on a sense of exploration and creative enjoyment with technology, and afterwards on the optimization of technology. The hacker ethic is characterized by a *passion to create* and share knowledge and to consider collective creation as a humorous and enjoyable action (Himanen, 2001). A hacker is defined as a person interested in experimenting with technology and its social uses, who acts to distribute knowledge in an effective, free and creative way; and for whom the Internet is not only a medium, but also a political space (Raymond, 2000, 2001).

Levy (1994) distinguishes several stages in the development of the hacker culture: true hackers of the MIT artificial intelligence lab in the 1950s and 1960s; the populist, less sequestered hardware hackers in California in the 1970s; and the young game hackers who made their mark in the personal computer age of the 1980s. Furthermore, after its beginnings at MIT, the hacker culture spread and adapted to various places. The hacker culture grew in Germany with the establishment of the Chaos Computer Club in 1981, the largest hackers association, which has

more than 1.000 participants. Chaos Computer Club participants are very organized, and are distributed in communities of development around specific programs. In Italy, a mature hackers culture also grew with an annual celebration of “hackmeetings” celebrated in Squatted Social Centers. However, the Italian hacker culture is more politicized and popular than the American and German hacker culture (Fuster Morell, 2005).

In this first period of software coding, most of the software circulated freely between the developer-hackers (Castells, 2002). However, in the 1970s a proprietary sense of the software started to grow, meaning restrictions on the use of software and the incorporation of a commercial sense. Richard Stallman, a programmer from the Artificial Intelligence Lab of the MIT, claimed the risk of the privatization of software to be an attack on the freedom of expression. In the famous words of Stallman: *"Free as in free speech, not necessarily free as in free beer"*.[4] In order to preserve the free character of the software, Stallman founded the GNU project in 1984 to develop an operating system that was to be completely free. Stallman also founded, in Boston in 1985, the Free Software Foundation, and with legal assistance established the General Public License and the Lesser General Public License, which allowed for the legal protection of free software (Stalder, 2010).

Free software is a term coined by Richard Stallman to refer to software that can be used, studied, and modified without restriction, and which can be copied and redistributed in modified or unmodified form either without restriction, or with certain requirements to ensure that further recipients also get these freedoms. To make software available as free software, the software must be accompanied by a software license stating that the copyright holder permits use, study, and modification of the code, and must therefore ensure that the source code of the program is available (Stallman, 1996).

Another cultural reference of the OCCs is the counter-culture movement of the 1960s. One of the first social sectors to see meaning in the new technologies of information and communication was the North-American counterculture. During the cold war, fear was used as a transfer mechanism for counterculture, as technology was directly connected to the war. The counterculture contrasted the general fear of technology and identified a tool to accomplish utopian ideals in the newly available technologies. In the book “*From counterculture to cyberculture*” Turner presents in detail the roots of cyberculture in the American counterculture of the 1960s (2006).

The initial online community was Usenet**,** established in 1980 as a distributed Internet discussion system. However, of particular importance in shaping the cyberculture was the WELL. The WELL (Whole Earth ’Lectronic Link) was a pioneering online community established in 1985. Its participants were mainly composed of members of the “back to the land” movement based on the Californian coast. Turner points out that: “*The WELL represents the establishment of a countercultural ideal: a nonhierarchically organized social form in which scattered individuals are*

4 Free software definition by the Free software foundation. Retrieved May 28, 2010 from http://www.gnu.org/philosophy/free-sw.html (May 28, 2010).

linked to one another by an information technology and through it the experience of a shared mindset. (...) thanks to the simultaneous rise of computer networking and networked forms of organization in the Bay Area, by the late 1980s notions of virtuality and community that once served to bond the commune dwellers of New Mexico to the hippies of Haight-Ashbury had come to support the integration of social and economic life on-line." (Turner, 2005, p. 512). One of the WELL participants, Howard Rheingold, is the creator of the term virtual community. At that time the idea of a communitarian connection though a virtual space sounded quite strange. Rheingold used the term 'virtual community' to connote the intense feelings of camaraderie, empathy and support that he observed among people in the online arena (Rheingold, 1993).

Online spaces are indeed a medium and thus shaped by the culture of their participants, and by the social relations exchanged through them; at the same time they intervene in shaping relations. The empirical research on the use of the NTI shows how technologies are reshaped by each cultural context. However, the Internet and other new technologies do not spread alone as neutral artifacts, the meanings of technology and expectations of use also travel with them. In this regard, the culture from of the first online communities, such as the WELL, left a legacy to today's cyberculture as a whole, and is present in most online communities.

Other influential communities are AOL, the largest of the commercial online service providers of chat rooms, and Slashdot, a popular technology-related forum, containing articles and readers comments (Poor, 2005). The Slashdot subculture became well-known in Internet circles and was a source of inspiration for the following communities. In Slashdot, participants accumulate a "karma score" and volunteer moderators of discussions are selected from those with high scores.[5]A third point of reference for OCCs are previous experiences of participatory knowledge-making. The OCCs are characterized by their participative approach to knowledge-making. However, the OCCs do not represent the first attempt to develop a participatory and collective approach to knowledge-building. Some examples of previous experiences of collective and collaborative methodologies for knowledge-building are: Italian labour co-research; women's groups of self-awareness and feminist epistemology; French institutional analysis; the Latino-American action-participation methodologies and communitarian research in general (Malo, 2004). The academic communities were initially also constituted by highly collaborative environments and communitarian dynamics. OCCs take special advantage of NTI to develop ideas already present in these previous experiences. Furthermore, some authors agree that in some cases the online dimension of the OCC is so strong that interaction, communication and agency in OCCs becomes Internet-based and Internet-specific, to the point of becoming unimaginable independent of it (Lanzara & Morner, 2003).

5 Sources Slashdot Frequent Asked Questions web section (http://www.slashcode.com/faq.shtml), and Wikipedia entrance Slashdot (Slashdot, 2010).

A characteristic of the OCCs that contrasts with previous experiences of collaborative knowledge-making is the high quantitative jump in the number of people involved in the process. OCCs are able to allow large-size collective action. Other characteristics that differentiate the OCCs from previous experiences are the overcoming of geographical and territorial borders, facilitating the creation of geographically dispersed communities, going beyond the local level, and, on occasion, representing the global community. According to other authors, the mediation of the Internet in the OCC enormously accelerates the process in comparison to previous experiences (Lanzara and Morner, 2003). Finally, the Internet facilitates an important characteristic of the OCC, which is that aspects of production and distribution are simultaneously juxtaposed. The spreading of the knowledge does not occur after it is produced, after it has become a product, but is spread from the moment that it is developed (Raymond, 2000).

II. II. From the 1990s: The appearance of the first online creation communities: Free and Open source software projects[6]

The first OCCs to appear were *development* communities based around software programming. By the early 1990s, the Internet had become a medium for collaboration among programmers. Linus Torvalds from Helsinki suggested, in 1991, the further development of the Linux kernel to a newsgroup on the Internet[7]. This led to the rise of one of the first and largest OCCs on collaborative software development. The work involved Linux joining the previous work of GNU, which led to the first completely free operating system built by a development community (Stalder, 2010).

Another well-known example of a development and distribution community is the Debian community, founded in 1993 and nowadays counting around 1,000 participants signing a "social contract",[8] referring to the methodology that guides the community (Nualart, 2006).

Since the 1990s development communities have proliferated. Free software became very popular and most of the software infrastructure that powers the internet is FLOSS (Weber, 2004). In 2007 Wheeler, drawing on an extensive survey of the rate of FLOSS adoption across various sectors, concluded that in many cases FLOSS is more used than proprietary competitiors' productus according to various measures (Wheeler, 2007)[9]. From the late 1990s onwards, some alternative terms for free software came into common usage, including open source software (FOSS), software libre, free, libre and open source software (FLOSS). The term 'open source' was

6 See Moody (2001) and Torvalds and Diamond (2001) for a detailed presentation of FLOSS history.

7 The kernel is the part of the operating system that provides its basic functionality (Lanzara & Morner, 2003).

8 Source website of Debian social contract: http://www.debian.org/social_contract

9 For example, several of the Internet's most basic technologies, such as the domain name system, have since its beginnings used FLOSS. Other components such as mail and web servers also run predominantly on FLOSS (Wheeler, 2007). According to web analytics firm Netcraft, in August 2010, 56% of webservers run on Apache based and free software. Retrieved August 15, 2010 from htt://www.netcraft.com. See also Lee (2010).

promoted by Tim O'Reilly, Larry Wall and Bruce Perens. It was popularised by Eric S. Raymond in a very successful article where he contrasted the organizational logic of a cathedral (refering to propietary software versus a bazaar (refering to open source) (2000, 2001).[10] Eric S. Raymond was also one of the founders of the Open Source Initiative in 1998.[11] The distinction between free software and open software is not so much a question of the software itself, but of two different ideological approaches. Whereas free software emphasizes the liberty free software gives users, open source instead emphasizes productive efficiency and business models based on open collaboration (Stallman, 1996).

II. III. 2001: From free software to free culture: The expansion of OCCs to other immaterial content

At the beginning of the millennium, the spread of the Internet and personal computers lowered barriers, the expansion of education, particularly in the global North, and knowledge-based markets saw larger sections of the population able to communicate and collaborate in online settings and holding the skills for engaging in activities of cultural creativity.

Additionally, starting in the 1980s and 1990s a group of USA academics – mostly law scholars – began to worry about the expansion of Intellectual Property in the neoliberal frame and initiated action in order to protect creativity and the public domain.[12] These academics helped develop the idea of the intellectual commons and invented **Creative Commons licenses** with the aid of Lawrence Lessig (Lessig, 2004). Creative Commons Licenses enable sharing and develop derivative work from previous materials and were adopted to support online collaboration (Creative Commons, 2009).

In this context, OCCs based on content other than software began to grow. New “free culture” expressions emerged with the aim of collaboratively creating cultural content and generating universal access to knowledge. The most important example of this is **Wikipedia**. It is an online encyclopedia founded in 2001 which has grown enormously since then. Wikipedia proposed that the Free Software organizational model could also be applied to other projects. A more detailed presentation of Wikipedia will be provided in the chapter dedicated to the Wikipedia case study.

The **strategy to build an autonomous infrastructure of communication and coordination within the GJM** for the global confluence of the movement after the events of Seattle against the World Trade Organization in 1999 represents another important step in the formation of OCCs around social memory processes (Milan, 2009). The GJM’s online infrastructure included the creation of *Indymedia* (an alternative media website); the creation of international e-

10 I am grateful to Georges Dafermos for his insights on this point.
11 Source Open source initiative web page http://www.opensource.org/history
12 Among them Pamela Samuelson, Jessica Litman, James Boyle, Yochai Benkler, Larry Lessig and among others.

lists (occasionally tied to international events); the intensification of email exchanges and the creation of information portals and a meta-linking network, among other aspects (Kidd, 2003; Mosca, 2010). Combined with mass global confluences, it allowed for the creation of a stable, multi-centered and diffusely connected environment at the GJM (Kavada, 2010). This structure of communication was extremely innovative at the time, and *Indymedia* became a reference point for *open publishing* and content generated by users (Haas, 2007). The distinctive emphasis on the participatory methods characteristic of the GJM, in contrast to the more centralized or hierarchical methods of the past, has also been applied to the role and nature of knowledge generated by the GJM (Fuster Morell, 2004; Santos, 2007; Wainwright, 2005). Furthermore, with the growing importance of NTI in society, access to NTI and its consequences, defined as *communication rights,* is becoming an area of continuous struggle, and was incorporated into the GJM's agenda (Milan, 2005; Milan & Hintz, 2004). A larger development of this process will be presented in the chapter on the social forums case study.

In 1999, influenced by the impact of Indymedia, journalism produced "by the people" began to flourish, enabled in part by emerging Internet and networking technologies, such as weblogs, chat rooms, message boards, wikis and mobile computing. **Citizen journalism** (also known as "public", "participatory", "democratic" or "street journalism") is the concept of members of the public "playing an active role in the process of collecting, reporting, analyzing and disseminating news and information" (Bowman & Willis, 2003). Linked to it is the phenomenon of personal blogs reporting on news that connects personal private life with public news. Blogs are generally managed by a single person, but interconnected through several technologies creating a blogosphere (Keren, 2006). Furthermore, hundreds of virtual news communities have been created and spread using Free Culture ideals, generating a critical media ecosystem, experimenting with different regimes in terms of intellectual property rights and conceptions, ready to mobilize and diffuse the alarm when a new impediment to free circulation appears (Keren, 2006).

Another relevant part of OCCs' configuration is the first generation to be 'born digital'. The first **"digital generations"** were born in the 1980s and 1990s. In rich countries, most of the younger generations grow up with access to education at different levels, and with access to the Internet and use the Internet in their everyday lives. These generations are known as digital born or digital native generations (Palfrey & Gasser, 2008; Tapscott, 2008). The normalcy of the online multi-interactive environment for the digital generation has resulted in what Lessig calls the "Remix Culture", also known as "read/write" culture (Lessig, 2008).[13] The Remix Culture of the digital generation is characterized by: easy access to text information and knowledge and audio-visual

13 Remix culture is a term employed by Lawrence Lessig and other copyright activists to describe a society which allows and encourages derivative works. Such a culture would be, by default, permissive of efforts to improve upon, change, integrate, or otherwise remix the work of copyright holders. Lessig presents this as a desirable ideal and argues, among other things, that the health, progress, and wealth creation of a culture is fundamentally tied to this participatory remix process. This term is often contrasted with permission culture. Lessig also uses the term 'Read/write culture' to refer to broadly the same thing and 'Read only culture' to refer to a permission based culture. For further explanation see the Wikipedia entry on remix culture (Remix culture, 2010).

materials; easy access and the capacity to use programs and tools to create and elaborate new cultural products; proactive or "prosumer" attitudes, that is a combination of a consumer attitude and a producer attitude, an identity of creators, not of consumers or spectators; and the habit of public exposure and living in public. According to previous research, young people provide more information about themselves online (Aguiton et al 2009). Furthermore, the Remix culture is an expression of a generational break: youth identity is constructed in a world where adults have no control. Alex Kozak from Students for Free Culture – Berkeley puts it this way: *'It is part of the identity of my generation to create and share content on large social networks, organise events online and share with each other our favourite music and movies, sometimes legally and sometimes not,'* (Buxton, 2009).

Finally, the history of OCCs also saw an important moment with the European invention of file-sharing and **peer-to-peer architectures** of information to facilitate access to cultural products.[14] File sharing is the practice of making files available for others to use though the Internet or smaller intranet networks (Bauwens, 2005). Usually, file sharing is developed in a peer-to-peer infrastructure (P2P). P2P architecture is based not on a centralized place to store and serve files. Files are instead decentralized, stored and served on the personal computers of the users themselves. This decentralized architecture makes it difficult to close the fluidity of exchange. P2P creates networks of people that exchange files, containing mainly music, videos, articles and books. The system is legal, but several lawsuits are outstanding that claim the files circulating do not respect copyright laws (Carlsson & Gustavsson, 2001). A good example is the Swedish Pirate Bay. To defend the values of file-sharing, a political party, called the Pirate Party, has also been formed in Sweden, which won representation in the European elections in 2009.

OCCs ideals have also arrived in the **scientific world with the building of digital commons** with scientific content.

On the one hand, the effect of the Internet has enormously accelerated the exchange of articles and the sharing of materials. These exchanges involve formatting online communities around e-lists or are otherwise web-based. With regard to this first type, the scope of these communities remains within the academic ambit, and they have several degrees of restriction of accessibility, open only to the academic community. Several online mechanisms for scientific collaboration emerged, such as the establishment of poles of empirical data (David, 2004).

On the other hand, an important historical moment for the emergence of OCCs guaranteeing access to scientific knowledge were the struggles over access to anti-retroviral drugs to treat HIV/AIDS in South Africa during the 1990s. The new medical inventions were sold in developing countries at prohibitively high prices, making them effectively unavailable to most who needed them (Stalder, 2010). Several actions were taken in order to overcome the Intellectual Property limitations which limited access to the medicines. This impulse led to the wish to reclaim the public character of research through open access to research results. One example of this is

14 For a repository on P2P history visit the P2P Foundation: http://www.p2pfoundation.net

the Public Library of Science (PloS). PloS is a non-profit, open access scientific publishing project funded in 2001, aimed at creating a library of open access journals and other scientific literature under an open content license.[15]

Another preeminent example of mobilizing for access to knowledge is Students For Free Culture. Students For Free Culture is composed by a network of over 35 chapters in universities.[16] The chapters are mainly in United States universities but are expanding in other countries. The leading universities are elite universities such as Harvard and Stanford. At the universities, they are supported by some professors and librarians. Students for Free Culture's goals include reforming the knowledge system at Universities for the creation of an *open university*.[17]

II. IV. 2006: The explosion of commercial Web 2.0

While previous developments are key for the commons logic and communities building digital commons, another approach appears in the new economy based on information access and sharing.

In the fall of 2001, the technological industry suffered what was called the "dot-com" crisis, which marked a turning point for the sector. The companies that had survived the dot-com collapse had some things in common. With the spread of the Internet during the 1990s, a major shift from storing data online and virtually instead of on individual computers took place, known as *data cloud*. With data cloud more and more commercial providers specializing in services for data storage and exchange online appeared. The new economy of information access and sharing, also known as Web 2.0 or Wikinomics, is an innovative economic trend based on the commercialization of flows and services of information and knowledge by multinational communication (O'Reilly, 2005; Tapscott & Williams, 2007).[18] In Castells' terms, a business *"wishes to raise money through innovation built over the other (...) cultures and once the Internet was a dense and used network"* is also a key component on the framing the NTI (Castells, 2002, p. 200). The most distinctive example of the New economy is Google. Examples can also be found in YouTube, MySpace or

15 Website of the Public Library of Science: http://www.plos.org/

16 Students for Free Culture's first national conference was held at Harvard in May 2007 and attended by more than 130 people. In 2008, Students for free culture met at the same buildings where the Free Speech Movement started at Berkeley in the 1960s congregating around 1,000 attendees. The students involved in the movement are predominantly male (Notes participant observation at the Students for free culture annual meeting 2008).

17 Students for Free Culture define an open university as one in which: 1. The research the university produces is open access; 2. The course materials are open educational resources; 3. The university embraces free software and open standards; 4. If the university holds patents, it readily licenses them for free software, essential medicines, and the public good; 5. The university network reflects the open nature of the Internet. Where "university" includes all parts of the community: students, faculty, and staff (Wheeler Declaration approved at Students For Free Culture Berkeley Conference 2008).

18 The term Web 2.0 was originally used to represent a shift in the business model, "a new way of doing business", after the dot-com crisis (O'Reilly 2005; Tapscott & Williams, 2007).

Flickr, platforms provided by Multinational Communication Companies.[19] An expanded presentation of this development will be presented in the chapter dedicated to commercial case studies.

The development of a new economy based on information access and sharing contributed substantially to the popularization of the multi-interactive infrastructure of the web. However, major accessibility (linked to Internet discussions) instead of functionality is what distinguishes the Web2.0 from the Web1.0 (Shirky, 2008). The success of the experiences based on Free and open source models constituted an inspiration source for the economical innovation. Indymedia, the news portal created in 1999 at the frame of the Global Justice movement, was also a source of innovation and inspiration for the new economy. Indymedia was one of the first successful site passed on “open publishing” or content generated by the user. Commercial corporations wanted to learn from the activist creativity and contracted activist involved in Indymedia or hackers of other activist media and free software experienced. Wikipedia starting in 2001 and raising an unprecedent success from 2003, also constituted a referential source of inspiration for Web 2.0. The new economy adopted these innovations to define a new business model based on the data cloud. However, in the light of this research, the corporation as infrastructure provider also changed the conditions of use of infrastructure in contrast to previous cases based on commons logic.

In this period, OCCs based on commons logic and GJM position as protagonists in the use of the technology was taken by the communications companies of the new economy. A media activist from Milan characterized this stage with the expression the “market is going beyond us” (A, Foti, Notes Networked Politics seminar on Networked Politics, 2006).

The expansion of commercial type of infrastructure providers online based on a corporate logic stresses the conflict with OCCs based instead of a commons logic. With empirical evidence, this thesis sheds light on and explains the difference between a commons logic and a corporate logic in shaping collective action in the digital era. In the light of this research, it can be predicted that in coming years, the possibilities for political mobilization on free culture issues will be likely to increase.

19 YouTube, with the slogan "Broadcast yourself", is a website to archive, share and comment on homemade videos; Myspace is a website for social networking where each person has their own page to present him or herself and interact with others; and Flickr is a website to archive, share and comment on photos.

II. V. A free culture movement in formation?

The development of OCCs is also fuelled by and contributes to the rise of the movement defending and advocating the creation of digital commons.

Several events, campaigns and international networks led to the formation of a free culture movement. The International networks such as the commons international network of supporters of Creative Commons licenses (Dobusch, 2009a), the recent Campaign against the Telecom Pack Reform in the European Union (Breindl, 2010), and the celebration of the first free culture and access to knowledge forum in 2009 constitute some of the key moments of confluence. Additionally, the OCCs for the building of digital commons are instances of participation in this FCM. By producing digital commons, OCCs fulfill the broad political goals of the FCM. OCCs for the building of digital commons, based on a commons logic, are arenas in which the communities clash and contrast with OCCs based instead on corporate logic, challenging the established proprietary production system of information and knowledge and a corporate oriented adoption of NTI. However, free culture activism and builders of OCCs are not necessarily the same people. Plus, a common identity for both profiles does not yet exist.

Several political aims are present in the FCM discourse: first, to preserve digital commons and empower OCCs through the availability of infrastructure for sharing and decentralised creativity and collaboration based on conditions which empower communities vis-à-vis infrastructure providers and guarantee their individual and collective autonomy and independence. Second, the FCM aims to make important information available to the public for discussion and ultimately to increase freedom of expression by guaranteeing the possibility to intervene and the free circulation of information in public life. North American free culture activists frame this goal as inspired by the Free Speech Movement of the 1960s and aim to have a similar impact to the Free Speech Movement. In Alex Kozak's words: *'Like the Free Speech movement, we are fighting against the top-down control of speech and are motivated by beliefs about basic rights. The differences are in our ability to organise electronically – our Mario Savio [one of the leaders of the Free Speech Movement] is more likely to inspire with a blog post than with a speech,'* (A. Kozak, Presentation at Networked Politics seminar on commons, Berkeley, 7th December, 2009). Third, the FCM aims to improve social justice and solidarity, particularly in the global North/South context, by removing barriers to access to knowledge goods. Fourth, in order to achieve the previous goals, the movement seeks to influence policy making and reform copyright, patent, and trademark law in the public interest, as well as the reform of the management of scientific knowledge at Universities.

Interestingly, the term "political remix" illustrates how the above claim is built. According to this research, political remix can be understood as the customization of the political message according to the "remix" of each individual's preferences, supported by the use of "individual media". This means, on the one hand, not only pushing to see the Free Culture message in mainstream old media, but activists themselves spreading the free culture though their own means,

contacts and audiences online. On the other hand, an activist does not "consume" or adopt the political message on free culture as a package, but creates the message and customizes it. Generally, the message combines the private and personal information of the person who spreads it with information of public interest.

However, the FCM is not easily characterized with traditional political categories. It it is better characterized by political ambivalence.[20] The form of collective aggregation of the FCM could be one of the reasons that explain this political ambivalence. It tends to be specific, mission oriented, and pragmatic. The FCM emerged around series of practices and shared conception of knowledge and its politics. Moreover, and, importantly, participants of the FCM do not need to agree on aspects that go beyond this specific area. The aggregation on specific common objectives could be exemplified with the case of Wikipedia. Wikipedia editors contribute on the base of very diverse motivations (Glott, Schmidt, & Ghosh, 2009) additionally, through my participant observation; I observed that Wikipedia editors can be situated across the political spectrum (from right to left). The aggregation around Wikipedia, however, is mission oriented and based on a pragmatic approach to collaboration in the common task of building of an online encyclopedia accessible to as many people as possible. There is no expectation that the editors share a common program or common politics which goes beyond building an encyclopedia.

The same can be said about the FLOSS communities. Here too, the motivations to contribute are very diverse, but the communities focus on specific goals of solfware development with a shared politics of knowledge. (Ghosh, Ruediger, Bernhard, & Robles, 2002; Weber, 2004). FLOSS can be seen as a rich political expression from the feminist theory approaches to the political, with however, a political agnosticism. Colleman stresses the firm denial by FLOSS developers of having any deliberate political agenda, in a conventional conception of politics. Though as Colleman argues, this political agnosticism has its own complexity. As Coleman puts it: : *"while (among FOSS developers) it is perfectly acceptable and encouraged to have a panel on free software at an anti-globalization conference, FOSS developers would suggest that it is unacceptable to claim that FOSS has as one of its goals anti-globalization, or for that matter any political program —a subtle but vital difference"* (Colleman, 2004, p. 1). Colleman and Hill (2004) points to FLOSS`s political agnosticism and its resistance to defining FLOSS in traditional political terms as one of the factors which would favor the "traveling" of the FLOSS and its adoption in diverse terrains. In the words of Colleman and Hill: *Free and Open Source Software (FOSS) has been adopted as a political tool by leftist activists. At the same time, it has been embraced by large corporations to extend profits and has been criticized as an integral force in late capitalism. It has been adopted by members of the growing Commons movement as a model for limiting the power of capitalism* (2004, p. 1). This political agnosticism could be read as an instrumental approach, a way to create more force around the adoption of FLOSS; however, it cannot be explained simply in terms of instrumentalism.

[20] Benkler suggests that the FCM open an opportunity to approach the left and libertarian agenda (Y. Benkler, personal communication, June 29, 2010).

FCM aggregation is built around specific missions with a strong tendency towards performative politics (that is, around "building" practices), and in the land of politics of knowledge, not involving other dimensions such as those linked to political ideology in a classic sense. As a result, there is around the FCM, a large political spectrum of participants, and the aggregation is based on their communality around the conditions of access to knowledge and the possibility to share and collaborate around information and knowledge creation. Around these issues of access to knowledge and the digital rights linked to sharing and collaboration, the FCM develops political actions, such as the Pirate Party which aims to give a political representation to the the interests of the FCM, or lobbying and political campaigns in the most traditional sense. In this regard, the FCM represents an emerging source of conflict and a clash in society around several conceptions of knowledge. The FCM grew over a new source of aggregation in society which is able of put together and create collaboration between very diverse forces, and of actors which are part of the whole political spectrum. However, the FCM does not aggregate around conflicts or areas which go beyond the politics of knowledge (which could undermine the possibility of collaboration around the shared terrain).

It is worth highlighting that more recently, linked to changes in the regulation of Intellectual Property and the lobbying pressure of the cultural industry, a more conventional political dimension of the FCM is gaining in importance. However, the tendency towards defining specific common goals and targets bringing together a plurality of actors, also appliesto the more politically conventional expressions of the FCM, such as protest actions, campaigns, lobbing activities or/ and search of political representation. For example, the agenda of the Pirate Party with political representation at the European Parliament is limited to issues linked to knowledge policy and its voters are part of the diverse political spectrum.[21]

Finally, the political support that the FCM gains in institutions tends to be different in the North than in the South. While in the North, particularly in Europe, the traditional left has been reluctant to adopt and support the FCM agenda (perhaps because FCM challenges traditional left visions of culture and knowledge, and its forms of collective aggregation); in the South, where the consequences of the current conditions to access to knowledge (such as in terms of access to medicines, education materials, etc) can be seen to be more dramatic, lefties parties, such as the Workers party in Brazil, has adopted the FCM agenda as one of its priorities.

According to Tilly social movements are defined as "a series of challenges to established authorities, especially national authorities, in the name of an unrepresented constituency" (Tilly 1983, p. 466). The FCM fits Tilly definition of a social movement insofar as it aims to challenge authorities in a traditional sense in order to reform the Intellectual Proprietary regime and claim the support of public institutions for free culture expression, in particular by protecting and preserving digital commons. However, a national authority is not its main target, it focuses instead on the

[21] Sources: Amelia Andersdotter (Member European Parliament for the Swedish Pirate Party) and programe Pirate Party 2009. Retrieved from http://www.piratpartiet.se/

European Union and the World Intellectual Property Organization (WIPO), a sub-organization of the United Nations. For example, the campaign against the approval of software patents in the European Parliament in 2006 was one of the major victories of the FCM (Breindl, 2010). The same can be said with regard to the achievement of the 2007 lobbying campaign at the WIPO in order to introduce a *development agenda*, which underlined the need for access to intellectual property to meet development goals, regarding, for example access to medicines (Stalder, 2010). Other authors have pointed out the transnational evolution of social mobilizations, (della Porta & Tarrow 2005; Keck & Sikkink, 1998; Rucht, 1999; Smith, Chatfield & Pagnucco, 1997), as is the case for the GJM (della Porta, 2009).

Additionally, focusing on state-related outcomes has kept scholars from developing a comprehensive understanding of how social movements effect change in socio-economic and cultural contexts (Amenta & Caren, 2004; Earl, 2000; Melucci, 1996). Social movement scholars have traditionally viewed movement outcomes narrowly, as the ability of a movement to achieve political or policy goals (Amenta & Caren, 2004; Gamson, 1975). Melucci states how a social movement "entails a breach of the limits of compatibility of the system within which the action itself takes place" (1996, pp. 29-30).

The FCM adopted the goal of putting participative knowledge-making into practice. However, in order to make it possible, it engaged in developing legal innovations, protest and lobbying political institutions (Frickel & Gross, 2005; Hargrave & Van de Ven, 2006; Moore, 1996). Those involved in the Free culture movement are not only interested in policy outcomes, but also contest cultural values and beliefs (Earl, 2004), leading to the construction of OCCs as alternative systems of production (Carroll & Swaminathan, 2000; Rao, 1998; Schneiberg, 2002). Very significant examples in this regard are the Free and Open source projects, which transformed the production of software in the NTI industry. Recent research shows that movements engaged in production as a mode of opposition have made significant creative and economic contributions to society (Dahlander & Magnusson, 2005; Shah, 2005; von Hippel, 2005). Furthermore, a focus on protest risks an incomplete understanding of how cycles of contestation evolve. Contestation is not likely to remain constant, mobilization may characterize early stages but then transform.

As is typical of New Social Movements, the movement struggles for broad cultural change as opposed to material claims. – fitting into the current shift towards the post-material (Appadurai, 1996). Touraine stressed that "*the social control of the main cultural patterns*, that is, of the patterns through which our relationships with the environment are normatively organized" (Touraine, 2008, p. 213) or "great cultural orientations" (Tourraine, 1981) are at stake in social movements. This could have no better expression than in the Free culture movement, which contests a certain conception of culture and the protocols which guide the possibility to construct culture in a digital environment.

According to della Porta and Diani, a social movement dynamic is present *"when single episodes of collective action are perceived as components of a longer-lasting action, rather than*

discrete events; and when those who are engaged in them feel linked by ties of solidarity and of ideal communion with protagonists of other analogous mobilization" (della Porta & Diani, 2006, p. 23). The FCM can be considered as in a stage of emergence and formation. Additionally, the FCM is less centralized than traditional social movements, made up of loosely connected communities that independently organize or produce digital goods and which occasionally engage in common campaigns. Additionally, the FCM can be defined as a "movement of movements". It is the result of the confluence and networking of several experiences and diverse trajectories based on a common set of values and principles, the most important of which are: accessibility and the flow of information and knowledge; creativity; participative formats; network settings; and communal ownership. Although still emerging and loose in character, the celebration of the first international forum on free culture and access to knowledge in October 2009 marks one of the key moments in which an umbrella framing of these various collective actions took place. On this occasion, a coalition of 200 organizations from several continents drafted and signed a common Charter for innovation, creativity and access to knowledge.

Additionally, alongside the informal exchanges between individuals or organizations engaged in collective projects, Diani identifies other two elements that define a social movement: conflictual orientations to clearly identified opponents and a shared collective identity (Diani, 2003, p. 301). The above mentioned Charter for innovation, creativity and access to knowledge is an example of how the FCM frames its opponents as political institutions regulating against its claims and multinational corporations (and their lobbies) as adopting monopolistic and abusive practices against the principles of the net. In line with the cultural theory approach to the definition of social movements, it also raises a sense of injustice (Ryan & Gamson, 2006). However, shared collective action seems to be the least (or most loosely) developed dimension in the FCM. The FCM is in its very early stages and is still developing its collective identity. There is no single term to refer to it, and although free culture is the most common one, other terms used include the Free knowledge movement and the Universal access to knowledge movement, among others. The term which frames the movement, that is free culture, was originally the title of a 2004 book by law scholar Laurence Lessig. Since then, it has been widely adopted. However, internal confrontations on defining the movement's identity are also present. A survey on the use of free culture term of 256 free culture initiatives in Brazil concluded that there is inconsistency between the concept of free culture as held by practitioners and that used by theorists (referring to Lessig's definition of free culture and Stallman's definition of free software) (Reia, 2009). Additionally, the decentralized orientation of the FCM, as well as OCCs, stresses a challenge that already exists within the GJM, that is how intense interaction among members should be, and how homogeneous should a way of thinking be before we may speak of movements or collective identities.

The repertoire of action includes a range of strategies. From the building of the digital commons to lobbying for legal and policy changes that affect the free circulation of information and the governance of the Internet. The FCM is composed by OCCs' foundations, peer-to-peer

infrastructures, international networks, specific campaigns, lobbies, alternative licenses, students and librarian groups, blog rings, meet-ups and local collectives, flash mobs, and individuals.[22]

The recent history of the FCMs goes hand in hand with the cultural conception, evolution and diffusion of NTI. The FCMs seems to depend on the level of diffusion of NTI because it is more visible in places where accessibility to the Internet is greater. Furthermore, the Free Culture frame seems to be moulded by the context of political opportunity and overall socio-political schemata of each place. FCM in the USA has closer connections with entrepreneurship and with universities (E. Stark, Interview, February 1, 2009; B. Moskowitz, Interview, December 16, 2008; J. Jacob, Interview, December 15, 2008; D. Harris, Interview, December 7, 2008). Additionally, the San Francisco Bay Area hosts the headquarters of a significant proportion of prominent organizations supporting the FCM. In Europe, the FCM has instead developed more connections with the autonomous sector of the GJM.[23] In Latin America, the FCM is linked to popular education and the "culture of the periphery" as seen from the popular expression of the "favelas" (P. Ortellado, Interview, January 28, 2009). Furthermore, a particular case is Brazil where there is institutional support for Free Culture from the Lula Government. In this regard, the Brazilian government has adopted and promoted Free and Open Source Software and promotes a Free Culture industry, among others. In the Brazilian context, a "counter-view" of the official discourse around "Free Culture" has also emerged, reclaiming a vision of Free Culture not seen as a commodity, and the development of mechanisms to restrict State control over the production of culture and expression. As the Brazilian Epidemia collective wrote in their manifesto; *"Free Culture is not a characteristic of the product alone. (...) Culture is free when those who relate to it are also free (...). Free Culture is a step towards the construction of a new society"* (Epidemia, 2009).

In the following chapter I discuss how the FCM challenges traditional conceptions of social movements.

Similarities with other social movements can be pointed out – particularly concerning its contemporary, the GJM. Boyle suggests that free cultural activism is a new form of environmentalism (Boyle, 1997). However, other authors claim that a comparison with music-based subcultures is more appropriate than any similarities with *traditional* conceptions of social movements (Dafermos, 2009; Dafermos & Soderberg, 2009; Gelder, 2007).

In conclusion, the Free culture movement (FCM) is defined as a network of individuals and organizations, linked by more or less dense networks, solidarity ties and moments of confluence, sharing a loose collective identity and a common set of values and principles (most importantly

22 The more visible organizations and expressions of the FCM are the Linux operating system, the Free Software Foundation, Pirate Bay file-sharing architecture, Indymedia an alternative media platform, Wikipedia an online free encyclopedia, Creative Commons Licenses, the Electronic Frontier Foundation, the Public Knowledge Foundation, the Public Library of Science archive, and the Students for Free Culture network, among others.

23 The FCM in Southern Europe developed connections with networks formed by the alternative media, the "hackmeetings" process, movements in defense of free circulation of people and the squatter movement. For example, Copyfight (http://www.elastico.net/copyfight) and Fadaiat (http://www.fadaiat.net) have a special interest in connecting the free circulation of information with the free circulation of people.

accessibility and the flow of information and knowledge, creativity, participative formats, network settings and communal ownership), whose acting together aims to challenge forms of knowledge-making and accessibility by engaging in the construction of digital commons and mobilizations directed against the media and cultural industries, their lobbies, and political institutions (at the national, regional and global levels).

If in the beginning of the 21st century a GJM emerged, claiming a globalization *from below* in resistance to neoliberal globalization (della Porta, 2009), my research provides insights that, one decade later, a FCM for digital commons as a contrast to corporate domination is emerging.

Chapter III
Theoretical framework:
Previous research on collective action in the digital era

The research builds upon, engages in dialogue with and connects several bodies of literature. In this regard, this research forms a node between previously dispersed bodies of literature. Three bodies of literature are particularly significant in this regard. The debate on the Internet and democratic organizing within the frame of political sociology and social science contribute to the formation of the frame of analysis for OCC governance and democratic quality. The debate on collaborative knowledge-making processes in digital settings in organizational studies and cyberlaw contributed to the analyses of OCCs' organizational characteristics. Finally, social movement theory contributed to the focus on the conflict between the main governance logics present in OCCs.

III. I. The debate on the Internet and politics or democratic organizing

Two particularly relevant approaches can be identified in the debate on the Internet and politics. On the one hand, a first approach considers the Internet as a new channel for existing political actors and participation forms. In this approach, the Internet is seen as contributing to solving current problems of the political system and reinforcing democracy as it is understood nowadays. On the other hand, a second approach characterizes the Internet as an environment, a sphere of social relationships, with economic, political and cultural dimensions, which together determine which organizational forms can be sustained and which are challenged. In this second approach, the question is about which society is in formation in the changing environment. From this perspective the Internet is not approached as a "cure" for democracy, but as a source that, combined with other aspects, might transform democracy.

Within the first perspective, according to Koopmans and Zimmermann (2003), the debate on the potential effect of the Internet on politics and democracy has from the very beginning been dominated by the confrontation between skeptical and optimistic views (della Porta & Mosca, 2006), utopias and dystopias (Silver, 2000), technology determinists and social determinists (Vaccari, 2009), mobilization theorists and reinforcement theorists (Norris, 2002). There are those that proclaim there are no relevant effects from the Internet on politics and democracy. The normalization thesis predicts politics will remain "politics as usual", and power relations will remain unchallenged by the uses of the Internet (Mosca, 2007). More recent studies move towards more intermediate positions. For Bimber, the changes associated to the uses of the Internet may create advantages for some forms of organization and structure, and disadvantages for others, leading to adaptation and change in the world of political organizations and intermediaries. Internet use could both strengthen and weaken democracy (Bimber, 2003).

Importantly, the Internet's effects on democracy depend on the normative vision of democracy adopted. In other words, depending on which ideal of democracy lies at the base of the analysis, Internet use could be well-suited to enhancing democracy in different ways; but where democracy is understood in another way, the same technological features can appear hostile (Koopmans & Zimmermann, 2003). Koopmans and Zimmermann (2003) suggest that several conceptions of democracy can be identified in Internet applications with democratic aims.[24] The effects approach is mainly characterized by conceiving changes as complementary to the current political institutions in liberal-representative democracies.

Two main areas of applicability can be differentiated within the effects perspective: the use of the Internet for reinforcing key components of the political process (such as voting and electoral campaigns) (Trechsel, 2007), and, the use of NTI for improving public administration and making professional politics more accessible. That is, the use of NTI for improving the quality of the services of an administration, starting off with greater accessibility to information and running online management in a consumerist sense, along the lines of the proposals made by the New Public Management school since the 1980s (Hughes, 2003). NTI is also used with the aim of bringing the citizen closer to political elites, for facilitating knowledge of and contact with parliamentarians and/or public actors (Subirats, 2002). However, some authors point out how NTI challenges the fundamentals of New Public Management (Dunleavy, Margetts, Bastow, & Tinkler, 2005).

Second, the effects perspective details the use of the Internet to reinforce the role of civil society and make space for more participatory public debate. In this view, the Internet is seen as a medium capable of fostering new public spheres since it disseminates alternative information and creates alternative (semi)public spaces for discussion. Researchers also point to how the Internet is redefining the public space (Bimber, Flanagin & Stohl, 2005; boyd, 2008).

The other side of these first two types of approaches is that, despite the increasingly closed nature of conventional politics and the increase in citizens' participation in public debate, some are of the opinion that there are also risks. In this sense, it is argued that NTI might push towards an over-virtualization of politics compared to the one the previous media generation (radio and television) created (Subirats, 2002). To complete this pessimistic scenario, it is predicted that NTI will allow exhaustive control of data and sophisticated political marketing, and will offer great possibilities for the manipulation of information, with little margin for generating change (Calenda & Lyon, 2007). Rather than strengthening the presence and participation of citizens in collective affairs, the use of NTI could end up by reinforcing the control and authority of institutional elites (Subirats, 2002).

24 Barber differentiates thin or representative democracy from plebiscitary and strong democracy (Barber, 1998), and van Dijk differentiates between six models of democracy that shape the opportunities and risks that confront people in relation to the Internet - legalist, competitive, plebiscitary, pluralist, participatory and libertarian democracy (van Dijk, 1996).

The environment approach places the attention on the relationship between Internet adoption and organizational power, pressures, and structural changes in online collective action. This approach analyzes the internal organizational logics of emerging forms of collective action in the digital environment without placing them in relation to the political institutions in an ideal of liberal democracy but instead by promising deep and fundamental transformations in the political institutions in the network society. This research on OCC governance is framed in this environmental approach.

The first studies focused on demonstrating that collective action was possible "on line" (Bennett & Fielding, 1999; Gurak, 1997). Then, researchers moved their attention to analyze the advantages and disadvantages of online collective action and which organizational strategies would most likely succeed or fail in an online environment (Bennett, 2003; Bimber, 2003; McCaughey & Ayers, 2003).

Having clarified these two main approaches to the Internet and politics, let us review the empirical findings that this research produced. Initially, and for many years, discussions on the Internet and politics were mostly speculative, abstract, and strongly normative, lacking empirical evidence for the strong claims made (della Porta & Mosca, 2006; Koopmans & Zimmermann, 2003). Since the mid-1990s, the discussion has been fuelled by increasing **empirical research on the Internet and democratic organization** within different disciplines. From political sociology and political science, studies can be distinguished between those analyzing users and patterns of usage by Internet users as citizens, and their consequences for political participation, and those analyzing the use of the Internet by grouping political actors.

With regard to the later, the first studies mainly concentrated on well-established and traditional actors such as parliaments and political parties, and on their strategies of communication via the Internet during electoral campaigns (Norris, 2002; Trechsel, Kies, Mendez, & Schmitter, 2003; Römmele, 2003). The initial results of these studies point to the low interactivity of the websites of political parties (Cuhna, Martin, Newell & Ramiro 2003; Gibson, Nixon, & Ward 2003; Gibson & Ward, 1998; Margolis, Resnick & Wolfe 1999) and institutions (Coleman, Taylor & Van de Donk, 1999). According to this initial research, political actors' uses of the Internet did not seem to differ from that of previous media as instruments of top-down communication (della Porta, & Mosca, 2006). This initial research generally concluded that the Internet has not dramatically altered the structure of political competition and participation (Margolis & Resnick, 2000). However, Obama's successful U.S. Presidency campaign in 2008 changed the scenario. After 2008, a reevaluation of previous theories took place along with a renewal of interest and trust in online tools to reinvigorate conventional politics (Gibson, 2009).25 The adoption of the latest generation of multi-interactive online participation mechanisms is are seen as promoting the voice of the citizens over established elites (Surowiecki, 2005; Leadbeater, 2008).

25 Some authors point out that the 2004 Democratic presidential nomination campaign of Howard Dean represents the first effective use of NTI (Teachout & Streeter, 2008; Vaccari, 2008).

As Bennett (2003) claims, initial research has pointed out those places where the least significant changes are likely to occur: the realm of conventional politics. In this regard, research which assigns minimal effects to the Internet and politics generally looks at how established political institutions and organizations adapt the Internet to their existing routines (Benneth, 2003). In Bennett's words (2004) *"When political networks are viewed at the level of constituent organizations, the implications of Internet communications can vary widely. Political organizations that are older, larger, resource-rich, and strategically linked to party and government politics may rely on Internet-based communications mostly to amplify and reduce the costs of pre-existing communication routines. On the other hand, newer, resource-poor organizations that tend to reject conventional politics may be defined in important ways by their Internet presence"* (2004: p. 125).

The debate on Internet and politics was followed by an interest in empirical research on the relationship between the Internet and interest groups, NGOs and social movements (van den Donk, Loader, Nixon, & Rucht, 2004; Vedel, 2003). Research on social movements and the Internet has been carried out in particular on the Chiapas Zapatista movement (Garrido & Halavais, 2003), the British online environmental network (Pickerill, 2003), and, the GJM (della Porta & Mosca, 2005; Van Aelst & Walgrave, 2004; Kavada, 2005, 2007a; Calderaro, 2010a) or on concrete and sporadic moments of mobilization (Rheingold, 2002). Several approuches can be differentiated within research on social movements and the Internet. This research built upon the web analysis of SMOs' democratic websites.[26] More concretely, a mapping of OCCs according to their democratic quality was developed within this approach.

This approach is based on the large *N* statistical analysis of the characteristics of social movement organizations' websites. It builds on the literature on democratic quality (Berd-Schlosser, 2004; Bollen, 1990; Bollen & Paxton, 2000; Diamond & Morlino, 2004; Morlino, 2004; Munck & Verkuilen, 2002). The empirical research was first developed with a focus on political parties' websites (Davis, 1999; De Landtsheer, Krasnoboka, & Neuner, 2001; Gibson, Nixon, & Ward, 2003; Norris, 2003; Römmele, 2003; Trechsel *et* al, 2003). It then moved on to examine non-conventional political actors such as Non Governmental Organizations (NGOs) (Vedres, Bruszt & Stark, 2005a, 2005b), social movement organizations (della Porta & Mosca, 2006, 2009; Sudulich, 2006; Van Aelst & Walgrave, 2005) and blogs on civic engagement (Navarria, 2007).

---

26 A significant trend of research on social movements and the Internet is based on a social network meso-reticular approach to analyzing the web hyperlink structure of a social movement's networks. This trend has been largely championed by Mario Diani (2004). Diani took the links between the social movement's website, among other sets of indicators both online and offline, as a reticular indicator of the existence of social movement networks, in order to extract their form and the structural positions and influence occupied by each organization in the network. In another a meso-level approach, Ruud Koopmans and Ann Zimmermann (2007) examined hyperlinks in order to extract the visibility of an organization through the role of search engines and communication networks that have emerged on the Internet. Concerning this reticular network analysis, the analysis is focused more on inter-organizational than intra-organizational aspects, which form my main research interest. Finally, this trend does not directly address the Internet as a subject for study. Instead, this research examines Internet uses as indicators of something else (hyperlinks as indicators of connections between organizations, for example), while the online dimension of the social movements is not their major interest.

One research design aspect that is common to the web analysis research approach is that the analysis does not "try to deduce social effects from the properties of technologies" (Vedres, Bruszt & Stark, 2005). This represents a shift from previous approaches: instead of asking why the political actors do not exploit the democratizing potential of the Internet, the question of which characteristics of political actors explains the current use they make of the Internet is addressed. In this view, social actors do not relate to the Internet through technology; on the contrary, actors are "guided" towards choosing between several uses of the Internet depending on their political agency, their environment, frames of political opportunity, communication strategy and conception of democracy (Vedres, Bruszt & Stark, 2005). In synthesis, actors model their use of the Internet to their styles and organizational strategies and logics (Vedres, Bruszt & Stark, 2005).

In *Searching the net: the Democratic qualities of the Internet*, della Porta and Mosca statistically analyze social movement websites, extracting several styles of democratic quality considering dimensions such as the provision of information, identity building, external accountability, mobilization, and the reduction of users' inequalities (digital divide) (2006). The different website styles reflect the different models of democracy (and democratic communication) present in social movement organizations (della Porta & Mosca, 2006). Similar findings were observed in previous research on the democratic quality of non-conventional actors (Navarria, 2007; Sudulich, 2006; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2005). The important point is that not all the dimensions are correlated: this confirms that organizations choose the maximization of some, but not all, dimensions of democracy.

Inspired by this approach, in order to map the OCCs according to their democratic quality, I mainly built on the conceptualization developed by della Porta and Mosca in their analysis of SMO websites (della Porta & Mosca, 2006). I readjusted the dimensions used in previous research in order to address the specificities of OCCs' online platforms. However, in developing my analysis, I identified a limitation. The research approach on dimensions of democratic quality of non-conventional actors is inspired by the literature on the democratic quality of nation-states and the web analysis of political parties and public institutions. In this regard, the set of dimensions of democratic quality are more suited to an organizational logic of representation than to an organizational and democratic logic which is not representative, as is the case for social movements and NGOs. This became more problematic for the case of OCCs. My adaptation of the dimensions to OCCs threw light on the limitations of these dimensions. As a result of the in depth analysis of the OCCs' organizational forms, expanded and grounded dimensions of democratic quality are suggested for future research.

Two major distinctions can be made in terms of how the set of dimensions of democratic quality I considered contrast with those seen in previous research. On the one hand, none of the previous research on the democratic quality of political actors' websites considered democratic quality associated to infrastructure governance. In this regard, previous research has approached the quality of online platforms according to how they are designed or which goals the actors want

to achieve with the tools, but not in terms of who can intervene in their design, agenda and governance more generally. In this regard, differing from previous web analysis research (della Porta & Mosca, 2006; Navarria, 2007; Sudulich, 2006; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2006) which only considered the design for participation in the platform, in my research, I consider a dimension of democratic quality in terms of openness to participation in platform provision.

On the other hand, none of the previous researchers within this approach have considered knowledge policy as a dimension which frames the relationships established though the platforms (Davis, 1999; De Landtsheer, Krasnoboka, & Neuner, 2001; della Porta & Mosca, 2006; Gibson, Nixon & Ward, 2003; Norris, 2003; Römmele, 2003; Sudulich, 2006; Trechsel et al, 2003; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2006). My research demonstrates instead that knowledge policy has become an essential aspect in the functioning of online spaces. Not only can knowledge policy be understood as referring to the conditions of access to the "knowledge outcome" of the community, but from a broader perspective it contributes to govern the relationships among participants and between the participants and the providers of online spaces.

This research contrasts with previous research not only in the dimensions of democratic quality considered; but also in its explanatory design. Previous research has concentrated on analyzing how political actors' strategies explain technological choices. But it does not consider the actual interaction taking place in online spaces (della Porta & Mosca, 2006; Sudulich 2006; Van Aelst & Walgrave, 2001; Vedres, Bruszt and Stark, 2005). In other words, the research designs of these previous studies were geared towards the analysis of the democratic quality of the set features of the websites, but not their actual use or participation in them.27 This research design risks the analysis of "empty" places. In this regard, the research design considers actual participation in OCCs. In addition to levels of participation, the level and complexity of participants' interaction and collaboration is also considered. In this regard, this research is original in providing an operative typology of collaboration in online platforms. Shirky (2008) also theorizes a typology of collaboration in online platforms. However this author did not develop an operationalization of collaboration.

Importantly, in contrast to previous onces, my research is original in developing an explanatory analysis of how governance settings in online platforms shape participation and collaboration in the emerging community. In conclusion, my research corroborates that, as was the case for actors with a mainly offline base, such as political parties, SMOs and NGOs, online collective action also presents several styles of democratic quality depending on each actor's style and organizational strategy (Davis, 1999; De Landtsheer, Krasnoboka, & Neuner, 2001; della Porta & Mosca, 2006; Gibson, Nixon, & Ward, 2003; Norris, P. 2003; Römmele 2003; Sudulich, 2006; Trechsel et al, 2003; Van Aelst & Walgrave, 2001). Going beyond the previous research, this

27 With the exception of Navarria who measured actual participation in the interactive mechanisms as part of the interactive dimension (2007).

research also explains how different choices in terms of organizational strategies have an impact on the levels of participation and collaboration achieved.

Another relevant body of literature on the Internet and SMOs that my research builds upon is the literature on the politics of technology in SMOs. While the web analysis of the dimension of democratic quality of political actors is based on a statistical analysis of how actors design their platforms, **literature on the politics of technology in SMOs** adopts a qualitative approach in order to argue how the different visions of political strategy and conceptions of democracy present within social movements explain their different approaches to technology (Caruso, 2004; della Porta & Mosca, 2005; Juris, Caruso & Mosca, 2008; Kavada, 2007a; Kavada 2007b; Mosca, Rucht, Teune, & Lopez, 2007). My research builds on and moves beyond the previous body of literature on the politics of technology in SMOs. Following the literature on the politics of technology in SMOs, it does not consider OCCs as monolithic actors, but instead considers the diverse views and contentions of each case. However, going beyond the literature on the politics of technology, this analysis does not limit itself to presenting the diversity of views cohabiting in each case, but also shows which outcomes emerge from this diversity. In other words, it considers how the "ecology" of approaches at each OCC impacts on the participation and collaboration raised online.

Furthermore, previous research on SMOs did not analyze the failure of SMOs to stimulate online participation in web platforms. In the case of the preparation of the European Social Forum (ESF), Kavada analyzes the e-mail exchanges and e-lists by activists. The author concluded that e-lists played a major role in the ESF organizational process (Kavada, 2006). The content analysis of e-lists related to the G8 counter-summit in Genoa in July 2001 carried out by Andrea Calderaro led to similar findings to Kavada's (Calderaro, 2010b). These researcher shows that the e-lists by SMOs are frequently used, also their use as spaces for democratic internal organization. What appears to be more limited is the use of web-based multilateral interactive systems by SMOs. According to della Porta and Mosca's SMO website analysis, only ten per cent of SMO websites had interactive mechanisms (della Porta & Mosca, 2006). Similarly, in a study of a sample of websites of protest networks and pressure groups, Sudulich analyzed websites focusing on two dimensions: their capacity for web connectivity and the potential for bilateral/multilateral communication offered to users, as compared with information provision. Sudulich concluded that one-way communication has been developed to a greater extent and with more sophistication than two-way communication. The level of two-way communication (participatory instruments) was indeed rather poor. Sudulich also concluded that SMOs do not differ radically from more traditional mobilizing agents, such as political parties (Sudulich, 2006). Furthermore, some authors have presented a pessimistic view of the participatory and deliberative potential of the Internet for SMOs (Rucht, 2004). This research suggests that SMOs do not easily adopt multi-interactive open platforms of participation and also suggests, as it will be empirically corroborated by this research, that SMOs have a limited capacity for generating participation and collaboration in open multi-

interactive platforms. These results appear more intriguing when put into context. SMOs do not adopt multi-interactive channels of interaction in a context of the explosion of this type of mechanism at the societal level with the diffusion of multi-interactive platforms of participation by commercial providers. My research is original in explaining why, SMOs do not easily adopt multi-interactive open platforms of participation and encourage online participation and collaboration in contrast to commercial providers of online platforms and other experiences such as Wikipedia or FLOSS communities. In order to do so, my research, unlike previous SMO research, analyzes the role of SMOs as infrastructure providers[28], and the specificities of the organizational strategies of SMOs with regard to the relationship established between infrastructure providers and participants or users in contrast to other models of infrastructure provision. In sum, my research sheds light on why the organizational strategy of the Social forums case with regard to online participation platforms results in the likely failure to mobilize online participation as compared to cases based on the Wikipedia strategy model and those of commercial providers.

A final remark on the field of the Internet and politics, although the research subject has expanded from conventional to unconventional types of political actors, the choice of the research object could in some ways have biased the results on the use of the Internet by political actors. Empirical research until now has mainly considered politics as necessarily having a previous (mainly offline) existence. However, the research field of Internet and politics could be expanded to consider the emergence of Internet-based collective action, as is the case for most OCCs, which apparently follow an organizational logic that is different from that of political parties or traditional social movements. In order to follow this development of the field, my research focuses on OCCs, whose expression mainly takes place online.

In conclusion, previous literature on the Internet and politics has provided the basis on which I build my analysis on the quality of democracy in OCCs. However, this literature does not consider the role of infrastructure governance nor how governance relates to the size of participation and collaboration. In testing the first hypothesis, that is if infrastructure governance shapes the community generated, this research aims to contradict the whole body of literature on the analysis of the democratic quality of political actors' websites (Davis, 1999; della Porta & Mosca, 2005, 2009; De Landtsheer, Krasnoboka, & Neuner, 2001; Navarria, 2007; Norris, 2003; Gibson, Nixon, & Ward, 2003; Römmele, 2003; Sudulich, 2006; Trechsel, Kies, Mendez, & Schmitter, 2003; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2005a, 2005b). The research makes original contributions to this body of literature as a result. Furthermore, this research contributes to expanding the field to actors that are not based mainly offline. Finally, this research helps to put into context the use of NTI by political actors by comparing the case of the GJM's attempt to build OCCs with attempts from other actors in society, such as Wikipedia and commercial cases.

[28] See Milan (2010) for a relevant exception analyzing the emancipatory character of SMOs' practices of providing media infrastructure.

III. II. First studies on online communities

The image of a community shaped in a virtual environment sounded rather “psychodelic” before the advent of the Internet.[29] The first proponents of the term community include Howard Rheingold (1993), who used the term 'virtual community' to connote the intense feelings of camaraderie, empathy and support they observed among people in the online spaces they studied. Early research pointed to peculiarities and anecdotes of virtual interaction in contrast to face-to-face communities (Rheingold, 1993; Schuler, 1996; Turkle, 1995). Online communities were seen as exotic and fundamentally different from face-to-face communities. However, online communities have become a normal part of many people’s lives, making strict demarcations between online and offline activity less meaningful (Rainie & Packel, 2001). In this regard, the categories online versus offline are adopted with caution in this research. Online generally refers to any interaction mediated by a computer; while offline is considered as anything which does not fit into the definition of online and involves a physical interaction. However, there is an ambiguous area between the two. Is mobile phone communication online or offline? As NTI become more popular, it is difficult to find purely offline situations. Some circumstances can be based in both dimensions. For example, a seminar in which participants interacts in the discussion both by speaking and through an instant message system. Furthermore, on certain occasions online is referred to as the new offline of the past. In this regard, these categories can be considered as part of an historical transition in the adoption of NTI, which have become meaningless relatively quickly.

Since the 1990s, the fields of website studies and cyber culture studies were created as a result of interest in and studies of online communities. The major works of the cyber culture discipline are distributed in three stages or generations according to David Silver (2000). The first stage, *popular cyber culture,* was marked by its journalistic and activist origins and characterized by its descriptive nature, mainly covering the task of introducing non-technical readers to the largely technical pre-World Wide Web version of cyberspace. The second stage, *cyber culture studies,* focused largely on virtual communities and online identities.30 Particularly, by the mid 1990s, with the introduction of the Web, scholarly interest in researching the Internet increased. Various perspectives were developed, all sharing the adoption of anthropological and ethnographic methodologies. The new areas of research included the exploration of the intersections between individuals, society, and networked computers; of what users do within diverse online environments; of writing styles, netiquettes and of (inter)textual codes used within online environments; gender within cyberspace; and, neighborhood networks). The third stage that Silver

29 Actually the term 'virtual communities' was influenced by psychodelic experiences (Rheingold, 1993).

30 In the book *Virtual Community*, Rheingold provides a social history of a particular online community - the Whole Earth Electronic Link (the WELL) (1993). The second pillar of cyber culture studies is Sherry Turkle's *Life on the Screen: Identity in the Age of the Internet* (1995). Turkle addresses the idea of online identities by exploring a number of virtual environments ethnographically.

differentiates is that of *critical cyber culture studies,* expanding the notion of cyber culture to include four areas of study -- online interactions, digital discourses, access and denial to Internet access, and interface design in cyberspace -- and explores the intersections and interdependencies between all four domains. Research on friendships (boyd, 2008), the nature of online trust and empathy (Preece, 2000) and online group dynamics (Preece, & Maloney-Krichmar, 2003) has also been carried out. Questions about who relates to whom and about what have been examined using network analysis (Wellman, 1997).

Cybercultural studies tended not to pay attention to underlying democratic structures and political senses, with the significant recent exceptions of Colleman (2004) and Kelly (2008) who address the political meaning of FLOSS communities. In this regard, although the research agenda is not the same as in my own, this field provides a reference for it in that the intention to extract the cultural logic of online interactions and the ethnographic methods for online environments initially developed here are also used for my research (Hine, 2000). Additionally, cybercultural studies center their attention on online communities, taking into consideration a large plurality of online community types. Nevertheless, the online communities whose main goal is to build a knowledge-intensive product, that is, the online creation communities, which are the subject of this research, have not been at the center of interest for cybercultural studies.

III. III. Conceptualization of online creation communities

Nowadays the term *virtual or online community* is used broadly for a variety of social groups interacting mainly via the Internet. But several types of online communities can be distinguished. Specific types of online communities are mutual support communities, social networking sites, intra-organizational communities of professionals (known as communities of practice), or community networks, that is physical communities that are supported by an online network (Preece, 2000). The term OCC refers to a particular type of online community: those whose goal is knowledge – both the making and sharing of it. Online Creation Communities (OCCs) are a set of individuals that communicate, interact and collaborate; in several forms and degrees of participation which are eco-systemically integrated; mainly via a platform of participation on the Internet, on which they depend; and aiming at knowledge-making and sharing.

In the 1990s in an article called “Neither market nor hierarchy. Network form of organization” the economist Goody Powell reclaimed a third distinctive form of production, that is, network oriented production (Powell, 1990). Common-based peer production (CBPP), in a more recent term coined by lawyer-scholar Yochai Benkler, refers to the commons as a distinctive model of production (Benkler, 2006). Since then, other authors have also examined the emergence of a "commons based peer production" (Antonelli, 1992; Grabher, 1990; Grabher & Maintz, 2006; Shirky, 2008; Tapscott & Williams, 2007).

Furthermore, Benkler's works build upon Ostrom's analysis of environmental commons (1990). In this regard, this research is an expansion of the research on different types of commons, what Hess and Ostrom (2007) refer to as the new commons.

Benkler created the term CBPP to describe a new model of production in which the creative energy of large numbers of people is coordinated (usually with the aid of the Internet) into large, meaningful projects mostly without traditional hierarchical organization and often, but not always, without decentralized financial compensation (Benkler 2006, p. 60).[31]

In a similar approach, in order to present the distinctive elements of OCCs, Raymond, one of the first to analyze OCCs through the FLOSS case, theorized a contrast between the "cathedral and bazaar" models. In the Cathedral model a restricted group of developers works in a centralized space, with a strong division of tasks, organized in a reserved manner and with considered planning. Instead, the bazaar model, characteristic of the OCCs, is very open and transparent as regards participation, and from the outset of work there is no central command or clear plan (Raymond, 2000).

Since these works and the success of some OCCs, the interest in OCCs has increased. OCCs are also referred to by other authors as P2P networks (Bauwens, 2005), clouds (Leadbeater, 2008), produsage (Bruns, 2008), free culture (Lessig, 2004), open culture (Stalder, 2005), online content communities (Reagle, 2004), epistemic communities (Tzouris, 2002), open source production (Anthony, Smith & Williamson, 2007), recursive publics (Kelty, 2008), and networks (Powell, 1990).

Two major distinctions can be drawn between OCCs and the CBPP conceptualization. On the one hand, the term OCC refers to cases or experiences, while CBPP refers more generically to a type of production. On the other hand, the analysis of OCCs found here is based on the fact that my conceptualization of OCCs embraces the infrastructure they require to operate. The conceptualization of OCCs integrates two factors: the platform where the participants interact and the providers of that platform. The provision part cannot be seen as a dysfunction or unimportant. Instead it solves some of the questions this type of online collective action raises, and is fundamental to their existence.

Instead, Benkler characterizes the distinctiveness of common-based peer production as relying on individuals who collaborate on large-size projects without market prices or managerial command. For Benkler, the characterization of CBPP is based on the organizational form of the platform; however, to define a commons-based form, in my view, one needs to consider infrastructure governance. My expectation is that my first hypothesis (this is a fundamental difference that allows us to differentiate between OCCs) will shed light on the importance of infrastructure provision in conceiving OCCs, considering that infrastructure governance is a

31 According to Benkler, four conditions support CBPP: these are public goods, low capital costs, the centrality of human capital, and the decline of communication costs (p. 34). Additionally, CBPP can better be applied to those jobs that can be split into small tasks and modules, and where the value of monetary return is small relative to the value of the hedonistic and social-psychological rewards (p. 61).

fundamental difference that allows us to differentiate between OCCs. In this line, I expect to question Benkler's (2006) analysis of OCCs that states that all OCCs are commons-based forms independently of their infrastructure governance. Instead, my analysis shows that, depending on the infrastructure governance, the resulting community may be a digital commons, or may not.

III. IV. OCC governance: The debate on distributed knowledge in globally dispersed settings

Aside from the debate around the conceptualization of OCCs presented in the previous section, the area of empirical research on OCC governance is a growing field.[32] One of the more lively debates in contemporary organizational research concerns how the coordination of distributed knowledge in globally dispersed settings takes place, and how it can be accounted for (Becker, 2001; Hansen, 1999; Orlikowski, 2002). Unlike other types of online communities, OCCs must integrate individual contributions into a common pool, which can heighten interdependencies and the need for coordination. Yet little is known about how OCCs organize around production govern themselves (O'Mahony & Ferraro, 2007). In this regard, some authors agree that if we regard OCCs as a model of knowledge-making, a number of questions emerge (Eisenhardt & Santos, 2000; Lanzara & Morner, 2003, 2004; Patriotta, 2003; Tsoukas, 1996). How can complex knowledge-making and sharing take place in such an extremely decentralized form of organization as the platform, in which formal governance structures are apparently weak or invisible, and in which permanent membership in the classical sense does not exist? How can such dispersed activities nevertheless lead to the creation of a complex product such as software code or an online encyclopedia? What are the basic mechanisms underlying the coordination of knowledge-making and sharing in OCCs and where are they embedded?

Some authors have attempted to answer the above questions by considering OCCs as chaotic systems (Kuwabara, 2000) while others have tried to spell out their social and organizational structures (Crowston and Howison, 2004; Iannacci, 2002).

The little empirical research on OCC governance is mainly concentrated on FLOSS communities (Crowston & Howison, 2004; Lanzara & Morner, 2004; O'Mahony, 2007; Weber, 2004) and more recently on Wikipedia (Burke & Kraut, 2008; Ciffolilli, 2003; Kittur, Suh, Pendleton, & Chi, 2007; Kriplean, Beschastnikh, McDonald, & Golder, 2009; Loubser & Pentzold, 2009; O'Neil, 2009; Reagle, 2007; Stadler & Hirsh, 2002; Tkacz, 2007; Viégas, Wattenberg & Mckeon, 2007b).

Previous research has mostly focused on analyzing the policy-making processes developed by the participants to govern their interaction. In contrast, this research analyzes not only the community of participants, but also the organization and the governance of the platform and other infrastructure required for collective action to take place. In my view OCC governance is

32 Markus defines open source governance as ''the means of achieving the direction, control, and coordination of wholly or partially autonomous individuals and organizations on behalf of the OSS development projects to which they jointly contribute'' (Markus, 2007).

based on *who* these three aspects apply to and *how* they are defined: the policies governing interaction in the platform, the space design or architecture of participation, and infrastructure governance. This research points out that to analyze the form of governance the community of participants chooses, there is a need to distinguish the conditions under which participants have the possibility to intervene in defining governance. The type of infrastructure governance shapes the emerging community in several senses, including the possibility of the community to govern interaction. In light of this research, depending on the type of provider, the community has the possibility to self-govern interaction through the platform, or governance is in the hands of the provider. In this regard, concerning the governance of OCCs, this research has shifted the focus in the literature from community interaction to include infrastructure governance.

Two exceptions in terms of studies considering infrastructure governance for the FLOSS case are present in the previous literature, those of O'Mahony (2007) and Lanzara and Morner (2003). Both studies are from the discipline of organizational theory.

O'Mahony (2007) researched the governance of FLOSS communities via case studies based on the autonomous representation foundation model (2007). She characterized the foundation model as *community management.* However, she left the questions of the characteristics of governance models other than *community management* and the degree to which *community management* can be applied to types of providers other than foundations open. My research is not based only on the autonomous representation foundation model; indeed as a result of it 5 governance models are defined. Indeed, from the comparison of these 5 models, I can empirically prove that (as O'Mahony suspected) the original *community management* governance of FLOSS has changed, with the appearance of new types of providers other than foundations.

Additionally, my research is original in providing a categorization and operationalization for infrastructure governance analysis. It is one of the first to analyze the forkability dimension (see Weber 2004 for a relevant exception) and the political meaning of forkability as a condition that guarantees the freedom and autonomy of the community from infrastructure and the infrastructure provider. Importantly, this research is original in developing an operative formula to analyze how power is embedded in infrastructure governance. Earlier research on OCCs indicated the particular form of ownership present in them (Weber, 2004). The present analysis was supported by this early research on ownership within OCCs. However, to analyze power within OCCs, I consider not only the distribution of ownership, but also the distribution of functions and authority as relevant to the discussion. In conclusion, my analysis contributes to the literature with a more extended approach to sources of power in OCCs and a operationalized formula to analyze power in OCCs. Additionally, my analysis of power with regard to infrastructure providers expands on the four types of power which are essential to a network society in Castells' terms (2009).33

33 According to Castells, in the global network society, power lies in four distinct forms of power: network power (the power of the protocols of communication to impose the rules of inclusion and dialogue); networked power (who has power in the dominant networks); network-making power (the paramount form of power, with reference to programmers and switchers); and networking power (the power of actors and

Concerning other authors that have previously considered infrastructure provision, particularly Lanzara and Morner (2003), the distinctive and consistent pattern of system behavior emerging from the different OCCs is that the coordination of knowledge resources takes a specific form that goes beyond the familiar forms of coordination based on classic organizational mechanisms such as the market, the hierarchy or the network, it is a hybrid system. It is not that traditional mechanisms are non-existent or irrelevant in OCCs; indeed from their analysis it emerged that they are all present to different degrees and in variable combinations. In this sense, the governance of FLOSS projects results in a combination of formal organizational mechanisms and decentralized and spontaneous mechanisms for the community platform. (Lanzara & Morner, 2003).[34] According to these authors, the presence of formal organizational features, however, does not really play a dominant or pervasive role in FLOSS projects, and taken alone would not be strong enough to account for the impressive performance of large size projects.

Similarly to Lanzara and Morner's (2003) description of FLOSS organizational strategies, my research also points to the presence of hybrid governance models in OCC organizing. Furthermore, it concludes (with statistical significance) that hybridism is a source of success. That is it is characteristic of the more successful strategies for sustaining infrastructure. Conversely, in the light of my research it also emerges that non-hybrid forms (which is the case of the "informal" type of provision of the assemblarian self-provision model) are weaker. Additionally, this research is original in exploring the tensions within the hybrid forms.

Concerning the previous research on OCC platform functioning, much of the literature has highlighted that most OCCs have a tendency to strong inequality in the distribution of content contribution among participants which results in a 90/9/1 law (Hill, Hollan, Wroblewski, & McCandless 1992; Nielsen, 1997, 2006; Kittur, Chi, Pendleton, Suh, & Mytkowicz, 2007; Ortega, 2009; Priedhorsky, Chen, Lam, Panciera, Terveen, & Riedl, 2007; Viegas *et* al. 2007; Voss 2005; Wales, 2005; Whittaker, Terveen, Hill & Cherny 1998). In this regard, this research provides new evidence confirming that a similar distribution of participation also applies for the case of SMOs (social forums case study). Additionally, with a qualitative analysis of OCC organizational forms, this research goes a step beyond the literature and provides an argument as to why participation distribution in OCCs follows an unequal pattern of distribution.

Finally, apart from introducing infrastructure governance as part of OCC governance, there are other major aspects with regard to OCC governance where this research is pioneering.

---

organizations included in the networks that constitute the core of the global network society over human collectives or individuals who are not included in these global networks).The closest source of power to infrastructure providers in Castells' typology is the "programmers". However Castells does not specify the question of providing infrastructure in the programmers' role, while he mentions questions (setting the agenda) which are not exclusively the role of infrastructure providers.

34 According to this authors the formal part applies to some simple decision-making rules for programming and communication, stable membership for a certain core of professional developers, and the documentation of source code and mailing lists.

First, previous research has overlooked the diversity of types of knowledge, concentrating mainly on the FLOSS cases and, more recently on Wikipedia.[35] In my view, restricting empirical research mainly to these cases does not allow to move beyond the possible peculiarities of these types of knowledge. In this regard, this study is one of the first ones to expand the focus to OCCs that are concerned with knowledge other than software. In this empirical research a comparison of several types of OCCs is developed: including strategies of infrastructure provision based on formally oriented versus informally oriented; for-profit and non-profit. It is pioneering in mapping OCCs' diverse forms and providing five models of OCCs according to their governance. Additionally, it is the first analysis of Wikipedia to consider the role of the Wikimedia Foundation as infrastructure provider. It is one of the first empirical studies on commercial service providers. Plus, as presented previously, it is one of the first to consider SMOs as infrastructure providers. In addition, this study is one of the few studies of OCCs based on case comparison36. It is also the first to combine large *N* and small *N* comparisons.

Another contribution to the literature is made to organizational theory where, in general, most of the research concerns consolidated and large experiences of OCCs, overlooking failed cases. Instead, the large *N* sample and the case study comparison presented here include failed cases.

Third, this is the first analysis to connect infrastructure governance with the growth of participation and collaboration. Previous studies considering the question of growth, however, have linked this to the design and usability of the platform (Diomidis & Panagiotis, 2008). This demonstrates that infrastructure governance shapes the community. Particularly, this research, in both its qualitative and quantitative dimensions, corroborates my hypothesis that infrastructure governance shapes the community in terms of size and complexity of collaboration.

III. V. Debate on collective action evolutionary paths

Initially, the concept of organization was understood as a form following a particular type of organizational principle (based on closed, hierarchical, bureaucratic and authoritarian principles) which appeared to undercut effective mobilization (Cloward & Piven, 1966; Gamson & Schmeidler, 1984), or, organizations were viewed as a blackbox "resource" that enhanced collective action by proponents of resource mobilization theory (McCarthy & Zald, 1977). Later on, discussions of organization, generic and implicitly hierarchical, were replaced by the analysis of organizational forms, understood as plural and diverse (Clemens, 1997, 2005; Clemens & Minkoff, 2004; Lichterman, 1996; Polletta, 2002). The move to an "organization as politics" approach represents a

35 Recently, Paul David has turned his attention to analyzing academic communities and spaces - pools of academic cooperation exploring the idea of an "open science" (David, 2004).

36 See O'Neil for a relevant exception of case comparison. The cases this author compares are primitive radical text archives; Dayly Kos, a progressive community weblog; Debian free software project; and, Wikipedia) (2009).

move away from rational models of hierarchical bureaucracy and a shift towards “open systems” of organizations, inviting a more political and cultural view that addressed both contention within the organization and relations across the boundaries and between organizations and the environment (Davis & Powell, 1992).

Despite cultural and political shifts to “open systems”, within social movement theory an unwillingness to look at social movement organizations as “organizations” persists (Clemens, 2005). In this regard, social movement theory does not focus on debates *within* social movement organizations, but on relations *among* organizations at the movement field level. Furthermore, in the movement organizing at the field level, research focused on non-hierarchical coordination.

In the last decade, there has been a renewed effort to combine organizational sociology and social movement theory (Davis, McAdam, Scott, & Zald, 2005), and to link the study and practice of organizing movements and formal organizations. The origins of this combination were based on a cross-fertilisation between the resource mobilization perspective and the “old” institutional approach to organization (Davis, McAdam, Scott, & Zald, 2005; Selznick, 1948). More recently and interestingly, technological network related phenomena, such as OCCs, have constituted a creative meeting point of political and cultural approaches to social movement theory and new institutionalism within organizational sociology (Powell & DiMaggio, 1991; O'Mahony, 2007; Weber, 2004).

This last combination of organizational theory and social movement theory seems to me the most appropriate for research OCCs. Processes of economic globalization, changing forms of production, the spread of information and communication technologies, and changing poles of power from states to corporations generate pressures for convergence in the processes of movements and organizations (Davis, McAdam, Scott, & Zald, 2005). My research throws light on the emergence of hybrid organizational forms. In this regard, in both the GJM and the FCM we can find the co-existence of formal forms based both on hierarchical and non-hierarchical formats. The GJM and the FCM can be defined as “movements of movements”. Such movements host great diversity and combine different organizational and democratic logics. Following this approach, my research aims to highlight this diversity, and particularly the different ways of combining diverse forms to create hybrid models. Furthermore, it aims to go a step further by not only presenting the diversity and contention inside OCCs, but also showing how, despite divergent interests and forms, several organizational and democratic logics are able to cohabit and cooperate. In other words, I attempt to move beyond the “conflict in diversity” approach in presenting the diverse views (i.e: the politics of technology research approach), and towards “cooperation in diversity”, presenting how diversity is adapted and negotiated in order to collaborate and act together. For example, della Porta and Rucht (2002) have analyzed the complex mix of actors that get involved in environmental campaigns, highlighting the importance of both protest-oriented and professional social movement organizations in promulgating challenges to institutions and fomenting resistance to change.

Recognizing that social organization rests on multiple forms of coordination, an emerging approach insists on recognizing heterogeneity in both the form of coordination and the character of organizations.

In their effort to comprehend the variety of organizing or organizational forms, the joint project of social movement theory and organizational analysis represents a model for the renewed appreciation of the many ways of creating and exerting power (Clemens, 2005). In this regard, while the combination of organizational theory and social movement theory to approach hybrid forms had focused on analyzing and contrasting organizational logics (hierarchical *versus* non-hierarchical), this research aims instead to analyze and contrast the democratic logics present in hybrid form (participative *versus* representational) and to address power in the governance of such hybrid (and distributed) forms.

Importantly, this research questions the classical approach of Weber (Weber, 1946) and Michels, who posit that organizations evolve by creating oligarchies, concentrating power and moving towards greater organizational conservatism. According to Michels' "iron law of oligarchy" (1962), as organizations grow in size and complexity, they become less democratic. With the "iron law of oligarchy", Michels' (1962) analysis of the German Social Democratic Party states that all forms of organization (regardless of how democratic they may be at the start) will eventually and inevitably develop into oligarchies. Any large and more complex organization, Michels points out, is faced with coordination problems that can be solved only by creating a hierarchical bureaucracy. The effective functioning of an organization therefore requires the concentration of much power in the hands of the few. Those few — the oligarchy — will in turn use all means necessary to preserve and further increase their power (Leach, 2005). Michels also points out that delegation is necessary in any large organization, as large numbers of participants cannot make decisions via participatory democracy. Delegation, however, leads to specialization which further alienates the oligarchy from the mass of members. In conclusion, according to the "iron law", democracy and large-size and complex agendas are incompatible. Contrary to this, I expect OCCs to be able to increase participation levels and address complex agendas whilst maintaining democratic principles. Other recent empirical research has provided evidence regarding the conditions under which complexity does not result in a decrease in democratic quality, but is accompanied by more participative forms (Doerr, 2009; Polletta, 2002).

In addition, classical political economy theory highlights the major difficulties of coordination and collaboration as more participants become involved in collective action and as the goal of that action becomes more complex (Hardin, 1968; Olson, 1965). Testing the third hypothesis, that is that the formalization path for OCCs does not generate larger and more collaborative communities, this research questions Olson's statement that formal organizing makes collective action dilemmas easier to overcome (1965).

III. VI. Expanding the approach to social movements: Performative movements as challengers of cultural codes and modes of production

Social movement theory initially tended to approach social movements in a protest perspective and defined the preconditions on their impacts in terms of national political institutions. Yet this narrow conception of a social movement's expressions and outcomes has prevented researchers from realizing all the impacts of social movements (Giugni, 1998). In this regard, my research on OCCs stresses some challenges already present in social movement theory: highlighting the performative dimension of social movements (not linked to protest) and expanding the definition of social movements as challengers of socio-cultural organizational logics and modes of knowledge production.

At the movement level of the free culture movement, there is a combination of, at one end, a strategy of protest and lobbying to contest policy outcomes, and, at the other, a strategy of building digital commons. In other words, the protest dimension is also present in the FCM. However, the performative dimension and the challenge of knowledge production has become more visible and prominent for the OCCs than in other movements. This can lead to the construction of alternative systems of production (Carroll & Swaminathan, 2000; Rao, 1998; Schneiberg, 2002). These social movements organize not only in order to protest against established systems, but to further the collective production of scientific, artistic, technical, or general knowledge (Frickel & Gross, 2005; Hargrave & Van de Ven, 2006; Melucci, 1996; Moore, 1996).

Furthermore, OCCs take special advantage of NTI in order to develop alternative conceptions of knowledge already present in previous social movements, especially in terms of the transnational diffusion and creation of knowledge. In this regard, OCCs emphasize alternative forms of knowledge. However, the literature has not dedicated much attention to knowledge and social movements (Bucchi & Neresini, 2006; Castells, 1997; Cox & Barker, 2003; Eyerman & Jamison 1991; Fuster Morell, 2009b; Melucci, 1989, 1996; Santos, 2004; Touraine, 1978, 1985).

Social movement studies have, however, dedicated some attention to social movements from a cognitive approach (without considering the Internet dimension). Some authors argue that social movements build knowledge by creating an individual and collective identity, defining their adversary and structuring a vision of the world proposed as an alternative to the dominant one (Bucchi & Neresini, 2007; Castells, 1997; Melucci, 1996; Touraine, 1978, 1985). In a cognitive approach, Eyerman and Jamison have argued, using examples from environmental movements, that this activist theorizing falls into three categories: a *cosmological dimension*, consisting of a world view, historical meaning, emancipatory goals, etc.; a *technological dimension*, consisting of specific movement relationships to technological and technical activity; and an *organizational dimension*, consisting of the structural and communicative forms that the movement's activities take (1991). Eyerman and Jamison's analysis was contested by Cox and Barker, opening a debate concerning the levels at which these three cognitive aspects are present in social movements

because of their condition as social movements, or whether they are present in all types of social action (Cox & Barker, 2003). Cox and Barker's arguments are based on an empirical analysis of how activists build theory though pamphlets and through the list of 'frequently-asked questions' often developed for newcomers to an Internet newsgroup or mailing list. They consider, contrary to Eyerman and Jamison, that the cosmological and organizational go together, and that the technological dimension is not necessarily present in social movements. In another line of work, but nevertheless approaching social movements as generators of knowledge, Boaventura Do Santos Sousa presents the WSF as a sign of a new epistemology. This new epistemology is based on the ecology of knowledge, and the work on translation is an alternative to the search for "an impossible unique theory" of postmodernist critique (Santos, 2004, 2005a, 2007). He highlights the Social forums as spaces for the meeting of different trajectories of knowledge such as feminist theory and environmental and cultural studies. At this meeting point, formed by the WSF, Santos reclaims the lack of hierarchy among the different knowledge types and the importance of building translations. In the practice of movements, the work of translation concerns both knowledge and actions (strategic goals, organization, styles of struggle and agency). The basic premise of the ecology of knowledge trajectories is that there is no global social justice without global cognitive justice (Santos, 2004).

My research suggests that the emergence of collective action in online environments apparently follows an organizational logic that is different and occasionally opposed to political parties or traditional social movements**.** In this regard, for example, OCCs are based on individualistic participation. This rise of individualism as a base for collective mobilization is a challenge to the idea (present among left-wing sociologists and some parts of social movements) that individualistic types of cultures tend to support individual achievements, resisting the perception of positive effects of individualism in terms of commitment and political engagement.[37] This is a challenge already posed by the GJM to social movement theory, which is further stressed by OCCs. Additionally, the decentralized character of OCCs stresses a challenge that already exists within the GJM, posing the question of how intense interaction among members should be, and how homogeneous a way of thinking should be in order to be considered a movement or collective identity. In *sum*, in my view, OCCs are an emerging actor worthy of consideration in social movement research debates. However, from this research it also emerges that the analytical categories used to research OCCs may require adjustment to adapt them to the peculiarities of these forms.

In conclusion, my research is innovative in bringing to the attention of researchers of social movements challengers of knowledge forms of production, and in framing OCCs as a free culture movement. It is pioneering in terms of expanding the analysis of OCCs to realms of knowledge other than software. It is part of a research approuch towards a combination of organizational theory and social movement research, combining an organizational and a political conflict analysis.

37 I am particularly grateful to Prof. Donatella della Porta for her insights on this point.

It sheds light on a fundamental source of power and conflict in a network society. It is innovative in developing a map of the democratic quality of OCCs. Additionally, it provides a more complete understanding of governance, which considers not only platform interaction, but also infrastructure governance and a formula to analyze power as embedded in OCC governance (highlighting the political importance of knowledge policy and forkability). It is also original in pointing to how infrastructure governance relates to participation and collaboration growth. It contributes by providing empirical evidence showing that OCCs bring about greater democracy with greater complexity, in contrast to classical theory which points to a tension between complexity and democracy. Also, in contrast to classical collective action theory, as a result of this research, hybrid forms of organization, more than formalization paths, are shown to be characteristic of successful OCCs. Methodologically, the study is innovative in developing a case comparison combining both large *N* and small *N* analyses.

Chapter IV

Methodology

The combination of methods and the comparison of the cases are the main characteristic of the empirical research design, which was developed in order to grasp the complexity of OCCs.

Firstly, the empirical research was based on a multi-scale approach; it consisted of a quantitative large *N* analysis of the cases and a qualitative small *N* comparison of four case studies. The large *N* analysis was carried out first in order to map OCCs and single out hypotheses, the mechanisms of which were then analyzed in the small *N* case study comparison.

Secondly, both offline and online methods were used.[38] While in the pioneer studies of online communities, researchers adapted methods for use online (an approach called *online* or Internet research, see Hine, 2000 for an extended presentation), my methodological design is based on a combination of online and offline methods.[39] Hine highlights two major issues at work within online methods, ***innovation*** and ***anxiety*** (Hine, 2000). Online methods are by definition an innovation (Hine, 2000). One feeling that is regularly reported by researchers involved with online methods, and which I also experienced, is the *enthusiasm* involved in using them and in opening a new frontier (Hine, 2000). However, Hine also points out that this innovation aspect also represents a source of anxiety, as the task of innovation is to replace old, reliable and established modes of research, leaving a field of experimental settings and unproven methods. When using online methods**,** it is necessary to consider the specific status and characteristics of the medium (Johns, Chen, & Hall, 2004), and as some researchers have pointed out (Hine, 2005), existing methods do not necessarily apply to the Internet. Furthermore, online methods are not confined to technology; they involve reflecting about what it means to be "in the field" (Hine, 2000). Anxiety about online methods very often arises with regard to the ethics of online research–as a new form of social interaction for both researchers and researched (Hine, 2005). In sum, the use of online methods in this research represents an innovative research methodology, and research on OCCs is also an

38 I use the categories online and offline with caution and only when I cannot find more precise terms. Online generally refers to any interaction mediated by a computer; while offline is considered as anything which does not fit the definition of online and involves physical interaction. However, there is an ambiguous area between the two. I carried out interviews by mobile phone, for example, and it is unclear whether this should be considered online or offline. As NTI are further adopted, it is difficult to find purely offline or online situations. In conclusion, I consider these categories part of an historical transition in the adoption of NTI which may well become meaningless relatively quickly.

39 Online ethnography was adopted by many early researchers of online communities to understand online behavior (Baym, 1993; Hine, 2000). Methods for content and linguistic analysis were also adapted for analyzing computer-mediated communication (Herring, 1992, 2004). Databases with digital threads on links and other interaction data were used early on for social network analysis (Wellman & Gulia, 1999) and on some occasions visuals were used to make large sets of data manageable (Sack, 2000; Viegas, Wattenberg, & Dave, 2004). Online interviews and e-questionnaires or e-surveys are also methods used in early research on online communities.

innovative field. Therefore I considered a combination of online and offline methods appropriate to assure data validity and enrich the analysis. The online methods include an extended use of online ethnography (navigation and content analysis), the collection of digital threads for web analysis; visualization of videos, and some chat and phone interviews. The offline methods used were participant observation, interviews, and discussion groups.[40] Finally, the triangulation of methods was helpful for cross-validation.

Thirdly, I combined interacting with informants to collect data, for example, during interviews and the use of methods based on "organic data". "Organic data" refers to collection of digital threads available online, or the observation of the public practices and discussions that the cases generate in their daily on and offline lives without external intervention. For example, the analysis of e-mails exchanged in public mailing lists among the participants in the cases, or the analysis of videos of interventions by my interviewees in events. Most of the activity in OCCs is publicly available and recorded, so there is an abundance of data available on OCCs' practices without the researcher needing to use methods to "create" data. Furthermore, one of the main problems was data overload. More than a lack of information, I faced a great challenge in *selecting* relevant information. In this regard, it is important to go online with a clear and disciplined outline of the concrete data required.[41] In using "organic data", I followed the *digital* methods approach based on "following the medium" instead of trying to adapt already known methods to the study of online practices and methods which require the "creation" of data rather than the use of available data (Rogers, 2009).

Last but not least, a double perspective, that of the researcher and that of the action, was present in the research. This refers to several questions. First, it refers to the use of my personal involvement as empirical input. When I started this doctoral research, I was an active participant in the GJM and in the process I became actively involved in the FCM. My personal involvement on the issues researched here constituted some advantages, and some challenges in the development of the research.[42] Second, as part of the research methodology I decided to

40 Annex II provides a list of the empirical material collected.

41 Furthermore, NTI facilitate the spreading and sharing of research data among scholars, which contributes to the availability of large amounts empirical data for the development of research.

42 Due to my personal involvement in the Social forum case, I had personal contact. This made it easier to identify key informants and to obtain interviews in the social forum case than in the othe cases. However, for me building a researcher identity was more challenging in the Social forum case than in the other cases. For example, during ESF meetings I had to learn to stop my inertia to engage in solving urgent organizational issues and instead use my time to develop interviews. Or during the interviews with Social forum participants, in contrast to the other cases, I had to be very cautious to not engage in responding to the questions myself (on some occasions, I had more detailed information on the issues of questions than the interviewee had). But the major challenge of building a research identity in the social forum case refers to not being recognized as a researcher by other researchers. For example, on several occasions, researchers of the Social forum referred to my work as informant's material, instead of research results. Finally, my experience in the Social forum case was very useful in terms of having been able to translate the results of the research into the language of action. My research question (How does infrastructure governance shape communities?) was grounded in a limitation I was facing within the frame of the Social forum. I could not understand and felt the need to research: *Why do the platforms promoted by the Social forum not scale up?; Why are Wikipedia and FLOSS communities able to scale while Social forum platforms are not?; Is this*

experiment myself with designing and providing platforms for OCCs. In this regard, as part of the methodological plan, I engaged in the design and provision of platforms[43]. This has been a very valuable experience, which gave me a closer understanding of the role of platform providers and the OCCs' functioning. And third, I dedicated time and effort to ensure that the research results spread beyond the academic literature under open access policy. In this regard, the research intends to contribute to the improvement of the governance of OCCs and the vivid societal debate regarding the politics of knowledge.

In the following section an expanded presentation of how the triangulation between the large *N* analysis and the case study comparison was designed is provided. This first section is followed by a more extended explanation of the methodology followed in the large *N* analysis and a section dedicated to presenting the data collection and analysis of the case studies. In a final section, relevant research sources are listed.

IV. I. Triangulation between the large *N* and the case study comparison

The combination of a quantitative large *N* and qualitative small *N* approaches were the driving force of the research. The combination of the large *N* and the small *N* approaches were particularly useful in two ways. First, the large *N* helped to conceptualize OCCs and extract their main organizational characteristics. The large *N* study was useful to shape a descriptive conceptualization of the OCCs. OCCs are very new phenomena, which have raised much interest; however, little scientific evidence is available. Going beyond the peculiarities of one case required a large *N*. Furthermore, the analyses of the organizational forms of OCCs (see chapter VI) were based on triangulating statistical data on the frequency of presence of various organizational features; while the qualitative data contributed to the understanding of the meaning and function of those features and how they related to the whole set. For example, from the large *N* study it resulted that in most OCCs the whole organizational process is publicly available. However, it was through the case studies that I was able to analyze how this organizational transparency contributed or challenged the functioning of OCCs.

Second, the combination of the large *N* and small *N* studies were essential to address the research questions. The large *N* study provided statistical evidence on *if and how infrastructure governance shapes the communities*. Furthermore, the large *N* study also contributed to distinguish several models of infrastructure governance. However, it was through the small *N* studies that I was able to understand, beyond the question of "if" infrastructure governance shapes communities, "why" the different models of infrastructure governance shape the communities in

---

related to differences in the organizational strategy?). In this regard, my commitment to the action increased my motivation to find an answer to my research (and political strategy) question.

43 The OCCs I participated in building were openesf.net, openelibrary.info, ESF Directory and Networked Politics.

different ways. For example, the large *N* study yielded the result that the corporation service provision model generates the biggest communities; however, it was through the case studies that I could analyze why, extracting some mechanisms that explain this effect.

Nevertheless, there was also a trade-off in the combination of large *N* and small *N* studies, as constituted a very heavy volume of empirical work. Additionally, the differences in the technological bases of each case made large *N* comparisons difficult in terms of finding equivalent indicators for all the cases.

Finally, in both the large *N* and small *N* studies centered on cases, an exploration of the contexts of the OCCs was also developed. To contribute to an in-depth understanding of the OCC phenomenon and its framing in a larger **free culture movement** process, 10 interviews with free culture practitioners and promoters and participant observation in 7 major free culture events were conducted, and some documents were analyzed. A total of 8 interviews with major experts in the area were also conducted (Yochai Benkler; Donatella della Porta; Dorothy Kidd; Howard Rheingold; Fred Turner; Jerry Feldman; Micah L. Sifry; David Silver; and, Steve Weber). These interviews were used as background material and were carried out in parallel with the large *N* analysis and case studies. This material was also useful to understand the context of each of the cases studies and guarantee the independence of the case selection.

In the following sections, a focused presentation of the large *N* analysis and the in-depth case study comparison will be presented.

IV. II. Mapping OCCs: Large *N* analysis

Some of the initial research on the online dimension is characterized by the need of "mapping" a new and unknown phenomenon (Bimber, 1998; Constanza-Chock 2003; Garrido & Halavais, 2003; Rodriguez, 2003). Following this approach, I started the empirical research by mapping the OCC phenomenon.

The mapping of the OCCs was necessary due to the novelty and the scarce empirical research developed on OCCs. There are no findings concerning the actual dimensions of the universe of OCCs and the variety of forms they take. Furthermore, most empirical research carried out is based on analyzing single OCC.

For the large *N* analysis, I followed the previous web analyses on the democratic quality of political actors' websites. This approach applies the analysis of the quality of democracy in nation states to the analysis of political parties and unconventional actor's websites.[44] In my view, the set of dimensions of democratic quality of the web analysis taken in account in this analysis are more adapted to an organizational logic of representation than to an organizational and democratic logic

44 A review of the web analysis of unconventional political actors in light of the literature on the quality of democracy is included in annex IV.

which is not representational, which is the case for SMOs, NGOs, and even more so OCCs.[45] Yet despite the limitations of this research approach, the predefined dimensions of democratic quality were useful as an overall approach and to map the OCCs. However, for the case study comparison I abandoned the pre-defined dimensions of democratic quality and used a grounded theory methodology to understand and analyze the democratic logic and qualities present according to the actors.

The large *N* web analysis was based on a sample of 50 case, and involved filling a data a codebook, data collection of digital threads and producing a descriptive statistical analysis of the data.

For the **sampling**, a snowball technique was employed by exhausting the search through following the hyper-links between platforms; searching documentation and literature; and, using general search engines (i.e., Google).[46]

I should stress that in the case of OCCs, random selection is difficult given that the universe is unknown. Some scholars also argue that with random selection there is the risk of "missing important cases" (King, Kehoane & Verba, 1994, p. 124). In my sampling strategy I tried to reflect the heterogeneity of OCCs, but was careful to ensure variation in the explanatory variables without regard to the values of the dependent variables. However, I cannot say that my sample is representative of the (unknown) universe of OCCs.

The strategy for the case selection for the sample was first to filter out all those cases that did not fall within the definition of OCCs and which were not international in scope. Then, a variety of OCCs were selected among the remaining cases by following two sampling guidelines: age or funding year, type of content, and technology.

The OCCs considered in the sample are of global or international scope in terms of the audience the community wants to reach. However, it several types of "globalism" were identified in OCCs: OCCs based on a single global platform (most of them in English); one global platform translated into several languages; and several autonomously developed linguistic or regional platforms. Finally, there were two cases connected to a particular region, but aiming at global

45 For example, according to the large N analysis openness to participation appears as very characteristic of the OCCs. However, as emerged from the small scale study, the meaning of openness needs to be understood. Openness to participation does not seem to be connected to an idea of participation as equal participation, characteristic of representational forms, but as an option. The same can be said of transparency. From the large N study, it resulted that OCCs perform badly in terms of transparency as transparency was defined according to form based on delegation. However, OCCs also resulted as based in another type of transparency that is organizational process transparency. In sum, the dimensions of the democratic quality of OCCs used in the large N analysis were reviewed in the light of the in-depth analyses of the case studies.

46 The final sample of 50 cases is composed by: aboutus.org, Archive, Beppe Grillo, Biotech Indymedia, Connexions, Debian, Delicious, DOAJ, Drupal, Ekopedia, E-library for social transformation, ESF Directory, Face Book developers, Facebook, Flirck, Free Open Research Community, Information Visualization, Internet Encyclopedia, Intute: Education and Research, Jurispedia, Networked Politics, Open Directory project, Open ESF, Open Plans, Open Site, Open source ecology, Openstreetsplans, Ourmedia, p2pfoundation.net, Plone, Plos, Project Gutenberg, Protest.net, SELF Platform, Slashdot, Source Watch, The Assayer, The Global Oneness Commitment, USSF, Wikia, Wikihow, Wikipedia, Wikitravel, Worldcat library search, WSF 2008 Map of actions, WSF Process, and, You Tube

reach. However, it could be added that from the sampling, it also emerged that the population of OCCs of global scope did not appear to be very large. A large number of software development communities are known and several directories of FLOSS projects are available online. However, concerning other type of works, during the whole research process only around 150 cases were identified.

Concerning the providers' headquarters, most are in the USA, in Silicon Valley (California), New York or Boston. Other places are Europe (the Netherlands and Sweden) or India.

Variety in terms of the age in the sampling process was sought in order to allow me to consider how OCCs evolve over time, and to avoid restricting the analysis to the more recent types of OCCs. In this regard, even if there is currently a major tendency for the creation of OCCs, the sample includes one OCC created in the the 1970s (when online communities first began); 8 OCCs founded in the 1990s; 25 OCCs founded in the first half of the 2000s in the context of Wikipedia's success; and, finally, 14 OCCs founded more recently (between 2006 and 2008) in the context of the explosion of Web 2.0..

Variation in types of content was also sought in order to ensure the research results are not restricted to any specific type of OCC with particular content (such as software). This variation means that the results on collaboration in OCCs can be generalized, to some degree, independently of their content.

The defining element of an OCC is the production of a pool of information. However the range of topics and specific goals of each OCC is very diverse. Among them are the production of encyclopedias (Wikipedia, Interactive Design, Internet Encyclopedia, Open site); Dictionaries (Germ); Manuals (Wikihow); Travel guides (Wikitravel); Wiki farms or wiki hosting services (Wikia); Maps (Openstreetsplans, World Social Forum Map 2008); Software package (Debian, Plone, Drupal, Facebook Development); News (BioIndymedia, Slashdot); Multimedia archives (Flickr for photos**,** YouTube for videos); Educational materials (Connexions, SELF project, Intute); Libraries (Open e-library, Project Gutenberg, Public Library of Science, Free Open Research Community, The Assayer, DOAJ); Directories (aboutus.org, Open Directory project, Worldcat library search, Delirious for bookmarking); Research or information node repositories (Networked Politics, p2pfoundation.net, The Global Oneness Commitment); group action networking which refers to directories of groups, the elaboration of common action plans or writing political statements (Openesf.net, the political blog BeppeGrillo, Open source ecology) and finally, social networking sites (Facebook).[47]

It is worth mentioning that OCCs are different from networking sites, which are mainly based on personal content and have no final outcome which goes beyond the personal use of the

47 The OCCs are classified according to the architecture of the main resulting pool of information. Even if, as secondary activities, the OCCs also develop other information pools. For example, a OCC built mainly around a package of software could also develop an archive of multimedia material or a glossary of terms. In these cases, it only the main goal was considered.

platform (boyd & Ellison, 2007). However, considering the relevance of the Facebook case and the fact that it also hosts space for working groups[48], I included this in the sample.

With regard to types of knowledge, the sample is composed of cases with very diverse types of content, and the sample strikes.a balance between the several types of knowledge content.

Variation in the sample in terms of technology used was also sought. The reason for this was to ensure that the results would not only apply to one specific type of technology, but to any technology that allows or favors open collaboration. The sample includes, among others, cases based on e-lists, blogs, wikis, and content management systems.

Finally, even if size was not considered a criterion for the sampling process, some cases involve millions of people and others less than a hundred.

After building a balanced sample, I designed a **codebook** (available in annex I) aimed at a structured analysis of a set of indicators of the analytical variables. The main data collected was related to dimensions of democratic quality, the size of participation and type of collaboration. I filled in the codebook for each case, visiting and observing the platform of the OCC. The estimated time dedicated each OCC was between 40 minutes and 2 hours. In the preparation of the codebook, I took into account both my main research questions and the characteristics of the available materials. The indicators of the participation mechanism were particularly problematic because they vary greatly depending on each OCC.

Data collection was based on digital threads. In the Internet sphere, all actions are translated into digital information, known as *digital threads*, and these digital threads are traced on the OCCs' databases. This automatic documentation opens up a new frontier in research: the possibility of storing and elaborating information produced independently from direct research aims. All this growing information generated daily online can be connected and interpreted by programs in order to extract knowledge. This allows the many costs and difficulties normally met with in ad hoc and empirical data collection to be bypassed.[49]

In the OCCs, most of this information is publicly accessible and this kind of "indirect" strategy to obtain and elaborate information and knowledge has already been used in empirical research by some OCCs. For example, in the case of Wikipedia, information on what each participant edits and also how participants interact when editing an article is available. This data

48 Facebook is the second most visited website according to Alexa rankings http://www.alexa.com (January 1, 2009).

49 The treatment, accessibility, privacy, security, and legality of digital threads is at the centre of many debates. Some corporations can access this information simply by buying it or by ignoring legal restrictions. In this regard, digital threads are already exploited for police control and commercial aims (Calenda & Lyon, 2006). Two examples of the commercial type are supermarket cards and Google Gmail. Google Gmail is a service provide by Google consisting in offering free e-mail with the condition that the user accepts some publicity and that the content and traffic of the e-mail will be analyzed by Google. In the case of supermarket cards, the companies buy the possibility to store and elaborate these digital threads by giving "something" to the users (such as a gift after a certain amount of shopping or free services). In this way, the supermarket uses the "natural" behavior of users to elaborate marketing profiles. In the case of OCCs, all data is generally public, so legal and access restriction problems were not found.

was used to analyze editing behavior. Researchers applied data visualization techniques to the Wikipedia database to make the large set of data available from the lively editing activity at Wikipedia manageable and extract main editing behavior features (Viégas, Wattenberg & Dave 2004; Viégas, Wattenberg, Kriss & van, Ham, 2007).[50]

Using digital threads, data collection can be developed in two ways: through "human" identification or through a program. Human identification is when a person checks if an indicator is present or not in the platform; program identification is a program that is designed to automatically detect if the set of indicators are present or not, and to extract an automatic valuation and analysis of the website.

Initially I planned to build a program for the data collection and analysis of the indicators, which would serve to significantly reduce the time-consuming activity of web analysis. Furthermore, it would facilitate the building of a tool for the actors themselves to analyze their platforms. However, programming is costly and I could not develop the program due to a lack of funding.[51]

In order to overcome this problem, I built a sample of 50 cases from the 150 identified; developed a "human" data collection method for the digital threads;[52] and used various program applications covering some aspects of my web analysis. Specifically, I used the *Test of Web Accessibility* by the World Wide Web Consortium[53], which allows an automatic evaluation of the website's accessibility according to my set of indicators.

Finally, during the data collection "field notes" on general impressions were also kept in a field book.

The data was collected in May 2008 and in January 2010. The different data collecting moments are related to collecting data to analyze growth over time.

For the **statistical analysis** of the data, I used the program SPSS. I preferred the use of FLOSS software in the development of the research in order to ensure research transparency. However, I was not able to obtain training for using statistical programs other than SPSS. In SPSS,

---

50 The ways in which the digital threads are stored affect their possible usefulness for the research aim. In this sense, the interest in the potential of this information will probably produce a close link between the development of the databases and protocols that organize the flow of digital threads and the aim of obtaining more and more information that is potentially transformable into useful knowledge. This tendency suggests that one of the tasks of a researcher could be the conceptual design of protocols for storing relevant data and of the programs to develop them.

51 The design of programs for the analysis of digital treads is a new research frontier. It facilitates the collection of large amounts of data and reduces significantly the time taken in data collection. However, it requires technical skills and/or the covering of technical costs. Frequently, it requires the creation of groups with a plurality of skills and resources. In the frame of Phd research these requirements are difficult to fulfill. In order to profit from this frontier, it would be useful for a research center to build alliances and create the conditions for the technological support of the research. Finally, the interest in the potential of this information will probably produce a close correlation and alliance between researcher and platform provider in order to gain access to more and more information potentially transformable into useful knowledge.

52 The main restriction on the manual data collection was physical. The manual collection of data is very tiring and potentially eyes harmful, and does not therefore allow for long sessions of data collection of digital threads manually, only short sessions.

53 Test of Web Accessibility: http://www.tawdis.net

the bivariate non-parametric correlations were calculated using Tau_b of Kendall and for the mean multi-comparison one way ANOVA was used (Tamhane's T2 Significance 0.05).

Finally, the large *N* analysis was useful to gain a better understanding of the OCCs. As a result of the large *N* analysis, five infrastructure governance models of OCCs emerged. Methodologically, the large *N* analysis helped me to design the analysis of the case studies and in the case selection to cover the main four OCC infrastructure governance models. In Annex I, the documentation of the large *N* study is provided.

IV. III. In-depth analysis: Case study comparison

The case studies of OCCs were carried out in order to extract a more in-depth understanding and detailed view of the role of the providers of the platform of participation that hosts the interaction; the organizational and democratic logic, and distribution of functions between the providers of the platform of participation and the community of participants; and, finally, to find explanations of how and why the different infrastructure governance models shape the community's size, collaboration and self-governance.

The results of the large *N* study were essential for the **case selection**. Each of the four cases was linked to one of the four main models of infrastructure governance that emerged from the large *N* analysis. The case studies are: social forums for the assemblarian self-provision model, Wikimedia for the autonomous representative foundation model, Wikihow for the Mission enterprise model and Flickr for the corporation service model.

I did not develop a case study of the fifth university network model resulting from the large *N* because I considered it the least significant of the models for analyzing how provision shapes communities. The university model created neither the biggest nor the most collaborative or self-governed communities. Doing a case study of this model would add little additional input in contrast to the analysis of the other four models, while adding difficulty in terms of time constraints for analyzing the cases. See the following table for the models which represent each case.

Table I. Models and cases

Cases	For-profit versus non-profit	Open versus closed	Formal versus informal	Knowledge policy
Social forums for assembly model	Non - profit	Open	Informal	Netenabler
Wikipedia for foundation model	Hybrid (non-profit)	Hybrid (closed)	Formal	Netenabler
Wikihow for enterprise model	For-profit	Closed	Formal	Netenabler
Flickr for corporation model	For-profit	Closed	Formal	Black box

Concerning the performance of the communities, not all the cases reached the same size, collaboration or self-governance of the platforms: Wikimedia and Flickr have much larger communities than those hosted by Wikihow and the Social forum. The Social forum in particular only saw low levels of activity in its platforms and was discontinued in March 2010, which could be considered as a case of "failure". In terms of collaboration, Flickr is based on an album type of collaboration based on a sum of individual actions, while the rest are collage collaborations based on the merging and coordination of individual actions. Finally, in terms of self-governance of the community, Flickr does not promote community governance, but the rest do.

The comparison of two big “successful” cases (Wikimedia and Flickr) and cases which did not raise high levels of participation (Wikihow and the Social Forum) helped to identify the reasons why some communities grow and others do not scale up in terms of participation and collaboration. It is worth mentioning that this constitutes an innovation in the literature, as it is very uncommon to research "failing" OCCs, or indeed to carry out case study comparisons.

Table II. Case studies and size, collaboration and self-governance

Cases	Size	Collaboration	Community self-governance
Social forums	Small	Album and Collage	Yes
Wikipedia	Big	Collage	Yes
Wikihow	Medium	Collage	Yes (with involvement of the provider)
Flickr	Big	Album	No

For the case of the Social forum the platform analyzed was openesf.net. Openesf.net is a platform provided by the ESF. The ESF is a gathering of social movements in Europe. It is the European section of the WSF, which started in 2001 as a meeting of alternative groups and as a critique of the neo-liberal approach of the World Economic Forum in Davos. The Social forums host platforms for archiving information on the forums, developing the forum program, facilitating networking among the forum participants and allowing the collective (re)construction of the memory of the forums.

Wikipedia is one of the most outstanding examples of OCCs. It is an encyclopedia of free content created in 2001, developed in a collaborative manner with the use of Wiki technology by tens of thousands of volunteers around the world. The infrastructure is provided by the Wikimedia Foundation, a North-American, non-profit foundation based in San Francisco. Wikimedia is the *classic* online community. Most OCCs cite Wikimedia as their inspiration.

Wikihow is a wiki collaborative "how to" manual. Founded in 2005; it is provided by Wikihow, a start up based in Silicon Valley, San Francisco.

Flickr is a platform for sharing and archiving visual materials. As of November 2008, it claims to host more than 3 billion images. It is provided by Yahoo!. At first glance, Flickr may not appear to be an OCC, or the idea that a community of people interact around it. However, a closer look shows that interaction and collaboration are present in Flickr. Particiants interact in order to improve and comment on each other's pictures, collaborate to create "albums" of photos around a particular topic, or create learning groups around photography techniques. [54]

Another positive aspect of this case selection is the independence between the cases. Each case has its own context and trajectory. However, similar characteristics are also present, regardless of substantive contexts. Wikimedia is the symbol of the universal access to knowledge; Social forums are the most important institution of the GJM; Flickr is one of the first and most successful cases of the New economy of information access and sharing; Wikihow represents a trend of economical models with social bases.

The cases are also diverse in terms of the year in which they were founded. Wikimedia started in 2001, as did the Social forums; however, the use of multi-interactive platforms did not start in the latter until 2003. Flickr was founded in 2004 and Wikihow in 2005. However, as it emerged from the large *N* study, the "age" of the OCC does not necessarily explain the size of the community.

Concerning **methods**, I combined several methods in approaching the case studies. Furthermore, I did not follow the exact same plan for data collection for each case.

54 The sourcess of the the data used provided to present each case study are the information at the 'about' sections of each of the websitescases. For the Ssocial forum case see http://www.openesf.net or http://www.fse-esf.org; for the. Flickr case see http://www.flickr.com; for the Wikipedia case see: http://www.wikipedia.org or http://www.wikimedia.org and finally, for the Wikihow case: see http://www.wikihow.org.

On **data collection**, the cases were developed starting with the Social forum case, then Wikipedia and finally Flickr and Wikihow. The data collection on the Social forums was mainly carried out during 2007 and 2008. Wikipedia data collection was carried out from July 2008 to August 2009. Finally, Flickr and Wikihow data collection was carried out from July 2009 to January 2010. The Flickr and Wikihow cases were analysed in parallel.

The **social forum** case study was supported by online ethnography; participant observation at meetings of ESF organizers; 35 interviews with the main ESF organizers, openesf.net providers and participants; and importantly a statistical analysis of participation data available from the platform.

Online ethnography was carried out at openesf.net, but also at other open platforms promoted by the ESF; e-lists and chat meetings.[55] The most significant content from the sites and e-mails were analyzed in detail. Extensive notes were collected during the field work.

Participant observation was developed during the EPAs and during the forum itself. During the participant observation extended notes were collected in a fieldwork book. Notes were taken in particular at the General Assembly discussions on web tools, the Web team meetings and the online platform training sessions. Online training sessions were organized by the Web team during the EPAs in order to train EPA participants in the openesf.net and other platforms promoted by the ESF. Observing people interacting with openesf.net at the platform training sessions was especially useful. Notes on informal conversations were also taken.[56]

Interviews were also carried out during the EPAs and the forum. The interviews were of two types. The first type was long interviews with selected people. The selection criteria were a direct role in designing or promoting openesf.net, people not directly involved in the provision of openesf.net but with an interest in online platforms from both favourable and critical standpoints. A plurality of nationalities and genders was also sought in the interview selection. The second type of interviews was focused interviews (with one to three specific questions) and the selection of interviewees was random. These focus interviews were carried out at the door of the EPAs with people entering or leaving the EPA session. Ordinary "users" of openesf.net (as opposed to promoters) were also interviewed, as were non-users.

In this case, participant observation and online ethnography was framed by the researcher's participation in the Web team and experimentation in the design and promotion of openesf.net like any other participant in the Web team. The Web team was informed that my participation was linked to the development of this research and the preliminary results of the research were presented during meetings. Finally, other researchers of the ESF were interested in

55 Online ethnography was conducted for the mailing list and online spaces of the openesf.net for the Web team in 2008, openesf team in 2008, fse-esf mailing list, Nordic ESF Documentation and Nordic Web group; for the websites fse-esf.org, openesf.net, openelibrary.info and esf2008.org; and for weekly chat meetings of the ESF Web team.

56 Participant observation was carried out at the *European preparatory Assemblies* and the ESF Web team meetings in Lisbon in April 2007; Stockholm September 2007; Istanbul December 2007; Berlin February 2008; and Kiev June 2008; and during the World Social Forum 2008 (Betlem do Para, Brazil). Interviews were mainly conducted on those occasions.

my participation as member of the Web team and interviewed me. I also used these interviews as material for the research.[57]

The data collection for the statistical analysis of participation in openesf.net was extracted through online ethnography on 4, 5, 6 and 7 March 2008. The data was extracted for the complete population (220 participants and 62 projects).[58] The process of data collection was characterized, more than by a "lack" of data, by an over-abundance of available data. The collection of the data did not require any interaction from the participants. The data was collected "manually" (copy and paste), due to the absence of statistical data in the platform. In this regard, I planned to provide the openesf.net webmaster with the codebook designed for this research in order to contribute to designing the statistical data the openesf.net could automatically generate. However, openesf.net was removed from the Internet in March 2010. "Field notes" were kept during the data collection. For the statistical descriptive analyses of the data, the Open Office program was used. The codebook for the participation analysis of openesf.net is available in annex III.

Finally, interviews were also carried out with participants in other cases of the assembly model including Infoespai, Indymedia, Protest.net, Riseup, and, Aspirationtech.org cases.

The **Wikipedia case** study was supported by online ethnography; participant observation at meetings of wikipedians, the annual meeting of Wikipedians and at the Wikimedia Foundation's headquarters. A total of 32 interviews with wikipedians of several nationalities and backgrounds.

For the Wikipedia case I did not collect data on participation, but used available data from previous research; in particular, the data available from the wiki analytics developed by the Wikimedia Foundation and the research conducted on the ten largest linguistic Wikipedia by Ortega and Gonzalez-Barahona (2007).

Online ethnography was developed for e-lists and Wikipedia wiki. I did random navigation for the English Wikipedia in order to get a general sense of how Wikipedia works and how the interaction between participants takes place. The Italian and Spanish Wikipedia were also occasionally visited. Particularly, I followed the pages at Wikipedia dedicated to explaining Wikipedia and the wiki and blog Foundations, in order to observe how the Foundation presented itself and to analyze the Foundation's composition.

The online ethnography of the e-list consisted in reading the e-mail exchanges for the e-list dedicated to discussing Foundation matters (Foundation_l) from April 2008 to April 2010. This served to familiarize and keep me informed on the Wikipedia organizational process and, more concretely to identify main issues related to the Foundation's role. The e-mail exchanges from 01 October 2008 to 17 July 2009 were analyzed in detail.

57 In concrete, Lorenzo Mosca (Florence, February 2007) and Saqib Saeed (EPA - Berlin, February 2008) interviewed me.

58 The number of projects created was 62. However, 9 of them were created and deleted. The data collection was done for the 53 online projects remaining.

Participant observation was developed at meetings in Italy and the USA, and during the annual main meeting of wikipedians, named Wikimania (Buenos Aires, August 2009).59 At Wikimania, I presented the preliminary findings of the Wikipedia case study in order to provoke a discussion on the question of research, and to contrast the research results with active wikipedians. Finally, participant observation also took place during an internship at the Wikimedia Foundation (from 10 to 20 December 2008). Here, I volunteered at the Foundation, while developing my participant observation. Foundation members were informed that my presence at the Foundation was part of the development of this research. Volunteering at the Foundation was a great occasion to get a closer view of the Foundation's organizational logic and functioning.

The participant observations were also the occasions in which most of the interviews were carried out. In selecting the 32 interviews with wikipedians, I paid particular attention to collecting a variety of approaches to the Wikimedia Foundation, interviewing members of the Foundation's board and staff, but also volunteers, people with no involvement in the Foundation, and people critical of the Foundation. A plurality of nationalities and genders was also sought in the interview selection.

Finally, interviews were also developed for other foundation cases including Debian, Ubuntu, Craiglist, and, SugarLabs cases and participant observation for networking events for this model.[60]

For the **Wikihow** case, virtual ethnography, participant observation and 8 interviews were gathered.

The data on participation in Wikihow was extracted from the statistical data available at the site.

Online ethnography consisted of random navigation at Wikihow wiki in order to get a general sense of Wikihow's functioning. Additionally, it consisted in a detail analysis of the pages related to presenting the organizational form of Wikihow. Plus, the navigation at the platform also consisted in identifying the channels of communication between Wikihow enterprises and Wikihow participants, and observing the Wikihow enterprise staff and founder's behavior in contrast to that of the participants in the Wikihow platform. The message exchange in the forums (main communication channel among Wikihow participants) was analyzed in detail during December 2010. Particular attention was paid to how Wikihow enterprise staff and the founder related to the Wikihow participants, which agenda and issues related to enterprise were raised and how decisions were taken.

The interviewees included the Wikihow founder and non-members of Wikihow enterprise.

59 Participant observation at meetings took place at Wikimedia Italia's annual meetings (Rome, September 2007 and September 2009); Meet up at Palo Alto (November, 2008); and, meet up at Boston (October 2009).

60 Participant observation was carried out at the Nonprofit Boot Camp organized by the Craiglist Foundation (October 18, 2008).

Participant observation consisted in a visit to Wkihow's headquarters in Melo Park (California) in December 2009. The Wikihow community rarely met, so there were not many occasions for more participant observation. However, it is frequent for Wikihow participants to also take part in Wikipedia meetings and Wikimania, and so I was able to observe and interview Wikihow participants on those occasions. It was particularly useful to attend and observe the discussion of the Wikihow founder's presentation of the site's functioning during Wikimania (Buenos Aires, August 2009). The video of that intervention was also used as empirical material.

Finally, interviews or material from other cases were also gathered with founders or/and participants in other mission enterprise model cases including Wikia, Wikitravel, Wikianswers and Povo.

The **Flickr** case study was supported by online ethnography, 6 interviews with Flickr participants and employees; and a content analysis of Flickr staff interventions.

For the data on participation at Flickr data available from previous research was used. In concrete, Shirky analysis of Flickr (2008).

The Flickr online ethnography was based on regular visits from July 2009 to January 2010. Online ethnography was based on random navigation and the use of Flickr applications and interaction with other users; observation of groups; and reviewing the news of the Flickr team blog from December 2009 to January 2010. The pages dedicated to Flickr's functioning and the Yahoo! Flickr team presentation were also analyzed.

In addition, I interviewed Yahoo! employees and collaborators. As contacting Flickr's staff was not easy, the analyses, presentations and interventions of Yahoo! staff on community manager forums and conferences were crucial.61 Interviews with Flickr users were also conducted.

Apart from the Flickr case, interviews were also developed with employees of other cases of corporation service model, including an interview with an employee of Amazon. Also very useful was an interview with an expert on commercial community managing.62 Participant observation was also developed for Google and Facebook headquarter in Silicon Valley.

For the online ethnography I followed the same process of data collection and analysis for the **four cases**. Only the Wikipedia case required more attention in terms of online ethnography, because it is a much more vast community. However, in terms of numbers of interviews, participant observation and analysis of data on participation, I followed a different method for each case. It is worth noting the reasons behind this.

For the Social Forum case, I developed a statistical analysis of participation data for the openesf.net because this was not readily available. For the other cases I did not collect data on participation because there data were already available from previous empirical research or facilitated by the providers at the platform.

---

61 In concrete the Online Community Report Unconference 2009.

62 The expert was Bill Johnson from Online Community Report.

In terms of differences in numbers of interviews, I carried out more interviews for the Social forum and Wikipedia cases than for Wikihow and Flickr, because Flickr and Wikihow were the last cases carried out and I therefore had a much more clear idea of what data I needed to collect than when developing the first cases.

Although the OCCs are composed by people using computers - mediated communication, it was not easy to obtain online interviews when contacting users for the first time though online methods. Other researchers of online communities also mention that soliciting e-interviews or e-questionnaires to engage participants in online communities generally results in poor response rates (Andrews, Nonnecke, & Preece, 2003; Reagle, 2005).[63] To secure interviews with OCC participants, the most effective procedure was to attend offline meetings. Other good procedure to secure interviews was to ask the people I interviewed to put me in contact with others I wanted to interview.[64] In this regard, the lower amounts of interviews and participant observation in the Flickr and Wikihow cases is related to the fact that these cases had a much more restricted offline community life. In contrast, the social forums met every two months, which facilitated a larger number of interviews.

In order to fill this gap in terms of access to participants in Flickr, Wikihow and Wikpedia due to minor offline activity, I did internships in key physical areas related to these cases, or contacted participants individually during trips. I did a fieldwork internship in the San Francisco Bay Area from July to December 2008, where Wikimedia Foundation, Wikihow and Flickr have their bases. Data collection was also developed during trips to Germany, Italy, Spain and the US (New York and Boston) in the winter of 2009. Plus, data was also collected at Wikimania (the main annual meeting of Wikipedians) in Buenos Aires in 2009, where I interviewed Wikipedians, but also participants in Flickr and Wikihow.

Furthermore, I was a visiting researcher at the School of Information at the university of California, Berkeley from July to December 2008, which was valuable for discovering the previous work on online communities and discussions with the main experts in the area, including the supervision of Howard Rheingold, proponent of the virtual community concept (1993). The San Francisco Bay Area can be considered the “Mecca” of the internet. A significant number of the OCC providers are based there and the first online communities were formed by Californians (such as the WELL) (Turner, 2006). In this regard, visiting the Bay Area helped me to understand the cultural dimension and heritage of the OCCs.

63 When one depends on the interactivity of participants, online interviews do not necessarily mean that the time required for data collection is reduced. Especially when using asynchronous methods, a lot of time is spent as the “time-keeper.” That is, in reminding participants to send information. For example, if an individual is asked for an e-mail interview, one thing to remember is that, as indeed can happen to the researcher him / herself, the person addressed may be overloaded with e-mails. The person may even think that the e-mail interview is spam.

64 To me the major response of the informants in offline meetings is mainly related to gaining trust and attracting the attention of the informants. With other forms of gaining trust with the informants and attracting their attention, the developing of the case study only using online methods might also work.

Other peculiarities in the data collection relate to the fact that field work notes on online ethnography and participant observation were kept in a private wiki. Using a wiki for field work notes was useful in order to add links between notes, which was possible thanks to the interlinking options provided by wikis. The Zotero tool was also used to take and keep “pictures" of the online life observed. Online activity changes rapidly, so taking pictures of the platform being analyzed is recommended to keep a record of them.

Finally, it is also worth noting that during the interviews a visualization technique was used: the interviewee was asked to “draft” the relationship between the providers and the community according to how he/she conceived it, and comment on different drafts representing the mentioned relationship. This technique was very helpful in order to visualize the different mind maps and visions of the people interviewed. It was also very useful in terms of developing interviews with shy or not very talkative people (which, as I observed, appears to be a personality feature common among online active participants), it was a channel to help me to engage them in the interview and make them talk. Finally, the transcription of the interviews was time-consuming but essential, particularly considering that English is not my mother tongue. The level of understanding grows exponentially with transcription.

Concerning **data analysis**, the analytical process started with online ethnography.

In a first stage, the organizational structure of both the community and the Foundation according to the normative discourse was extracted. This was done by analyzing the pages which present the role and function of the provider and the community. It includes obtaining the distribution of ownership (importantly, by looking at the license terms) and the legal character of the provider and its composition.

In a second stage of the online ethnography navigation, the architecture of the site in terms of how it framed the relationship between the provider and the community was the issue of analysis. For example, listing the forms of contacting the provider present or which channels of communication between them were used.

In a third stage, the navigation consisted in observing and reflecting on what was actually happening on the site in terms of tasks performed at the platform. For example, if the providers were engaged in developing the content or not.

Finally, these three levels of analysis of the virtual ethnography were compared. A comparative analysis was made, focusing on whether the virtual performance of the relationship between the provider and the community was coherent with the normative presentation of it at the site or not.

Once a report putting together the organizational structure from the normative and legal perspectives was completed, the analysis of the architecture design and actual interaction was carried out. The content of the communications between the provider and the community was addressed. The content of the analysis was the institutional communication, and the content of e-list or/and forum conversations (depending on each case). In the content analysis of the

communications, the agenda of issues and the points of controversy were collected. The scheme of the communication was also included. For example, I analyzed how Wikimedia Foundation members used the e-lists and how they intervened in the conversations in the e-list; how Foundation members situated themselves with regard to non-Foundation members; which types of issue were raised, and how or if decisions were made on issues related to the Foundation's role within the e-list.

I continued with the analysis of the interviews. The visions and conceptions of the participants were analyzed on the basis of the interviews. What emerged from the virtual ethnography was used to design the interviews and select the most convenient profile of people to interview.

The interviews were used for two main reasons. On the one hand, I used the interviews to ask questions that could help me to corroborate or complete the picture of the organizational structure which resulted from the online analysis. On the other hand, the interviews were used to approach the different views present among each case population and the points of convenience, tension and controversy in the relationship between the provider and the community. In this regard, the use of a visual technique during the interview was very useful. In order to guide the questions to address this second goal, the informants were also asked to comment on concrete episodes in which tensions between the provider and the community emerged. The episodes mentioned were those that I observed during the content analyses of communication at the platform.

As a result of the interview analyses, on the one hand, an overall picture on the view of the provider's role was extracted. On the other hand, a classification on the different positions with regard to the diverse aspects linked to provider's role was developed. When different views or controversies were present on particular issues, the representation of each position was pondered according to the frequency of interviewees mentioning each position. Particular attention was paid to observing whether the different views on the provider's role were related to the particular roles or profile of participants. For example, if the people taking care of technical issues were more or less critical in contrast to the people dealing with legal or fund-raising aspect.

In *sum*, the virtual ethnography was used to extract the organizational structure in normative terms and also in terms of online behavior; the interviews were used to corroborate and complete this, plus to deepen the picture of views and conceptions of the role of the provider present in each case.

Participant observation was mainly used to observe the performance of the provider's role by looking at how providers intervened and positioned themselves physically with regard to the rest of the community. Participant observation notes were not analyzed as systematically as the other material, however they were important. Participant observation was useful to observe behavioral aspects that are difficult to capture during interviews, such as power games. These observations also helped me to re-frame questions during interviews, and talk with the participants (also informally) to corroborate (or not) the intuitions resulting from the participant observation. For

example, observing the attitude and how the Wikimedia Foundation's CEO talked to wikipedians during Wikimania was very illustrative for understanding the view present at the Foundation, what its roles should be and what the boundaries with the community were. Similarly, the lack of encounters between Yahoo! and the Flickr team with the Flickr community was a sign of how Yahoo! framed its relationship with the Flickr community.

Finally, what emerged from the different methods was put together. That is, a triangulation between the virtual ethnography, the interviews, and the notes from the participant observation was carried out in order to extract the resulting conclusions on the provider's role for each case.

Additionally, throughout the development of each of the cases, I also considered if other cases of the same model confirmed my observations. For example, when analyzing the Wikihow case, and example of the mission enterprise model, the material collected on other cases of the mission enterprise model, such as Wikia or Wikitravel, was also consulted. This comparison was a way to keep in mind how the analysis of each case could be generalized for other cases of the same model.

Discussion groups for case comparison

As part of the research, I contributed to the building of Networked Politics, a collaborative research project on broader issues related to my research (http://www.networked-politics.info).[65] This collaboration was of great value for the research development in terms of providing feedback on the emerging research and getting to know relevant literature.

Furthermore, with the support of Networked Politics, I organized two collective discussions (seminars) with participants and informants of my case studies, and with experts in the area. For the design of these group discussions, the methodology of focus groups was adopted. The most valuable seminars organized were "Governance of platform of participation: Social forums and Web Communities similarities" and "When does new media and political activism match/converge?" (at the School of Information University of California Berkeley, 6 & 7 December 2008). The transcripts of these discussions were used as empirical material for the research. They were very valuable for reflecting on the comparison of the case studies.

The collective discussions were also useful in terms of contributing to stimulating reflexivity and raising questions about the research among the participants of the cases themselves. Furthermore, organizing the group discussions contributed to solidifying connections and creating relationships among actors. For example, key participants in the development of Wikipedia and central activists of the Social forum met, as far as I know for the first time, in the seminar mentioned above to discuss common organizational features, contrasts and possible synergies. As a result, the first international forum on free culture and access to knowledge was then set up

65 Networked Politics is supported by the Transnational Institute (Amsterdam); Transform! Italia; the Institute of government and public policies (IGOP, Autonomous University of Barcelona); and the Euromovements. Global Commons Foundation (San Francisco). The International Forum on Globalization (San Francisco) has also contributed to the project.

(Barcelona, October 2009 http://www.fcforum.net). I consider facilitating reflexivity among actors and contributing to building relationships among them as possible impact of the research.

Finally, in order to contextualize the OCCs in the broader free culture movement, interviews with seven promoters of free culture were carried out alongside participant observation at major events in 2007, 2008 and 2009.[66] Interviews with major experts on OCCs and free culture were also conducted. Annex II includes a list of interviews, channels of online ethnography and participant observation events, group discussions and documentary material collected. Annex III provides the codebook for the participative data for the Social forum case.

IV. IV. Research impact

The politics of knowledge is a critical issue in a knowledge-based society. It is an issue of vivid discussion and interest in today's public debate. With this research, I aim to contribute to this debate through engaging with three communities: the academic community, civil society, and policy makers.

Concerning **policy makers**, a better understanding of the emerging visions of information access and exchange and cultural creation and the practices they involve is therefore essential to better define the appropriate policy regulations and a relational approach to these new social practices of public administrations.

With regard to **public debate**, during the research, I participated and organized events for civil society in order to intervene and raise discussions linked to this research.[67] Plus, as previously mentioned, as a result of the research connections were built, and a contribution to building an international space for civil society meetings on this matter was one of the activities developed in the research. Actions such as public presentations have also been carried out to bring the research results to the subjects of the case studies.

Guaranteeing the accessibility of the research results is a priority in order to reinforce academic exchange and collaboration with the **academic community**. In this regard, as a channel to present the research, and also for robust research transparency, a website dedicated to the research was built (http://www.onlinecreation.info).[68] On the website, presentation of the research

66 Participant observation was done at the Italian Hackmeetings (Hackmeeting Parma September 2006 and Hackmeenting Pisa September 2007); Caos Computer Club (Berlin, 2007); Students for Free Culture Conference. October 10th-13th 2008; Free culture encounters- World social forum (Belem do Para, Brazil) Januart 2009; Wikimania Buenos Aires, August 2009; Free culture research workshop (October 2009), Harvard University; First International Forum on free culture and access to knowledge. Barcelona October 29 to November 1 2009; and the Personal Democracy Forum - Barcelona 20-21 November 2009.

67 Importantly, with the organization of the free culture encounters at the World Social Forum (Belem do Para, Brazil - January 2008) and the First International Forum on free culture and access to knowledge in October 2009 in Barcelona. http://www.fcforum.net

68 The Internet is a medium that leaves the researcher more distant and anonymous than in face-to-face communication, and in which most non-verbal communication is missing. In this regard, a reference website for the research contributed to building trust with informants.

and updates on its progress were shared.[69] The archive of the data collected was made available at the website once the research was concluded. Additionally, open access academic publications will be privileged as much as possible.

Recognizing the informants' contribution is also a priority. In this regard, I sent the transcriptions of the interviews to the informants and considered the interviews as shared ownership between them and me.

69 Furthermore, the website was useful in order to build trust with potential informants when communicating purely through online channels.

Chapter V

Large *N* analysis

Mapping models of infrastructure governance for collective action and their effects on participation, collaboration and self-governance

This chapter maps OCCs from a quantitative perspective according to their democratic quality, and explains how infrastructure governance relates to size, level and type of collaboration and self-governance of the communities. Both exercises are connected, as the exploration of the democratic quality highlighted the importance of infrastructure governance in shaping the community.

The analysis that will be presented is based on a large *N* analysis of OCCs. The development of a large *N* analysis is appropriate for two important reasons. On the one hand, the OCCs are a recent and underresearched phenomenon: the large *N* analysis is therefore useful to describe and map the plurality of forms of OCCs and conceptualize their singularity as a form of collective action. More concretely, an exploratory overview of their democratic quality will be presented. On the other hand, a large *N* analysis is appropriate in order to test the three general hypotheses of the explanatory part of the research. The first general hypothesis concerns whether infrastructure governance shapes the community generated. Particularly, infrastructure governance shapes the community in terms of size, the complexity of collaboration and self-governance. This contradicts the whole body of literature on the analysis of democratic quality of political actors' websites (Davis, 1999; della Porta & Mosca, 2005, 2009; De Landtsheer, Krasnoboka, & Neuner, 2001; Navarria, 2007; Norris, 2003; Gibson, Nixon, & Ward, 2003; Römmele, 2003; Sudulich, 2006; Trechsel, Kies, Mendez, & Schmitter, 2003; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2005a, 2005b) (and also the previous literature on the governance of OCCs). The second hypothesis concerns whether or not OCCs are able to increase participation and address a complex agenda while maintaining democratic principles. A positive answer would imply that OCCs do not confirm Michels' "iron law of oligarchy" (1962), whice reads that as organizations grow in size and complexity, they became less democratic. Third, formalization paths in OCCs do not generate larger and more collaborative communities. In other words, OCCs do not confirm Michels' statement that any large and complex organization will end up creating a bureaucracy, nor Olson's postulation that formal organizing tends to overcome collective action dilemmas more easily (1965).

The large *N* analysis was based on a sample of 50 units, a codebook, the collection of digital data threads, and producing a statistical analysis of the data. I should stress that in the case of OCCs, random selection is difficult given that the universe is unknown. Nevertheless, I tried to

reflect the heterogeneity of OCCs. However, I cannot say that my sample is representative of the (unknown) universe of OCCs. For the sampling, a snowball method was used. The strategy employed in selecting the units for the sample was based on selecting the cases which fulfilled the OCC definition and had a global scope. From the cases that conformed to these two criteria, I selected in the cases in order to cover a variety of OCCs following several sampling guidelines: a balance between larger and smaller OCCs; equilibrium between more recent and older organizations; and a balance between the several types of knowledge work (i.e., multi-media archives, libraries, encyclopedias, dictionaries, information nodes, software programs, collective social memory, among others).

V. I. Mapping OCCs according to their performance on dimensions of democratic quality

The debate on the Internet and democratic organizing has raised much interest and has created expectations both in terms of its great potential and as a source of risk. In this context works of empirical research whose goal is the analysis of the democratic quality of the websites of political actors, have emerged under the name of web analysis of the dimensions of democracy. The web analysis of the dimensions of democracy approach is grounded in the literature on democratic quality (Berd-Schlosser, 2004; Bollen, 1990; Bollen & Paxton, 2000; Diamond & Morlino, 2004; Morlino, 2004; Munck & Verkuilen, 2002). It started with web analyses of political parties' websites (Davis, 1999; De Landtsheer, Krasnoboka, & Neuner, 2001; Gibson, Nixon, & Ward, 2003; Norris, 2003; Römmele, 2003; Trechsel et al, 2003). Then, the empirical research moved on to unconventional political actors including Non-Governmental Organizations (NGOs) (Vedres, Bruszt & Stark, 2006), social movement organizations (SMOs) (della Porta & Mosca, 2006; Sudulich, 2006; Van Aelst & Walgrave, 2005) and blogs of civic engagement (Navarria, 2007).

One aspect of the research design of the web analysis approach is that it does not try to deduce social effects from the properties of technologies (Vedres, Bruszt & Stark, 2005). According to this literature's results, social actors do not relate to the Internet as a monolithic unit guided by the technology; on the contrary, actors are guided towards choosing between several uses of technologies depending on their political agency, their environment, frames of political opportunity, communication strategy and conception of democracy (Vedres, Bruszt & Stark, 2005). In synthesis, actors model their use of technology to their styles and organizational strategies and logics (Vedres, Bruzts & Stark, 2005). With regard to OCCs, a series of questions nevertheless remains open: *how do OCCs model their use of technology in contrast to other actors? What are the organizational strategies of OCCs in online environments? How does democratic quality apply to OCCs?*

An OCC space of good democratic quality is defined by six dimensions: 1) organization of the information in a usable and accessible way to increase participation and inclusion; 2) facilitation

of access to the technology that supports the process to reduce participation barriers; 3) transparent organizational structure and accountable finances; 4) a knowledge policy favoring participants' relational freedom and autonomy from the platform; 5) openness to participation in the knowledge-making process in the platform; and, 6) openness to participation in platform provision. As will be presented in the following section, each dimension can also be separated into sub-dimensions (see Figure II for a scheme of dimensions and sub-dimensions of democratic quality).

Figure II. Dimensions and sub-dimensions of democratic quality in OCCs

Dimensions and sub-dimensions of democratic quality:

1) Information usability and accessibility to increase participation and inclusion
- 1.1 Information usability: searchability and use of the information
- 1.2 Information accessibility and the inclusion of people with special needs
- 1.3 Linguistic inclusion

2) Technical accessibility to reduce barriers to participation

3) Transparent organizational structure, administration **and accountable finance**
- 3.1 Provision of a series of information (i.e., structure of roles, legal status, finance, etc)
- 3.2 Presence of contact and possibility of joining online and offline
- 3.3 Knowledge policy transparency

4) Knowledge policy
- 4.1 License works (Copyright *versus* copyleft)
- 4.2 Software code (FLOSS *versus* proprietary software)

5) Openness to participation in the platform
- 5.1 Channels of participation
- 5.2 Protocols of use of technology that guides the participation
- 5.3 Information that facilitates participation

6) Openness to participation in platform provision
- 6.1 Possibility for participants to be part of the provider body

It is worth mentioning that in the analysis of the dimensions of democratic quality in OCCs that will be presented; the democratic effect refers to the internal democratic organization of the actor. This refers to the democratization of interaction among the participants established through the online space.[70]

70 In my view, a source of conceptual problems in previous web analyses is the failure to adequately define the object of the analysis. If the *object* of analysis of the quality of democracy in society is fundamentally the national state and its concrete boundaries (Berd-Schlosser, 2004; Bollen, 1990; Bollen & Paxton, 2000; Diamond & Morlino, 2004; Morlino, 2004; Munck & Verkuilen, 2002) the *objects* of analysis of web analysis are "in principle" the websites of concrete political actors and the interaction established through such online spaces. However, in previous web analysis, there is confusion as to what exactly the democratic effect applies to: democratic internal organization and web settings; or democratization of society. In this research the democratic character is applied to the internal organizing and web settings of OCCs. For an extended discussion of other problems of conceptualization affecting web analysis see annex IV.

In the definition of democratic quality in OCCs, I mainly build on the conceptualization developed by della Porta and Mosca in their analysis of SMO websites (della Porta & Mosca, 2006). In addition, I reviewed other previous empirical research and web analyses of unconventional political actors (including Navarria, 2007; Sudulich, 2006; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2006). While there is some common influence behind the previous research on the dimensions of analysis considered, there is no common set of dimensions or indicators for previous empirical analyses of unconventional political actors (see Table I on dimensions of democratic quality in previous studies). Instead, in each case, the researchers adapt the dimensions and indicators to their analytical interests.[71] In a similar manner, I have readjusted their dimensions in order to address the specific context of OCCs. The main difference between the dimensions of democratic quality used in this research in contrast to previous research is that I consider two dimensions linked to infrastructure governance: the openness to participation of the community in the infrastructure body, and the conditions of use of the infrastructure in terms of knowledge policy.

Table III. Dimensions used in the research in contrast to previous studies[72]

	Van Aelst P. & Walgrave	*Vedres, Bruszt & Stark*[73]	*della Porta & Mosca*	*Sudulich*	*Navarria*	*Fuster Morell*
Information	X		X	X	X	X
Mobilization	X		X			
Participation (Interactivity)	X		X	X	X	X
Information Usability			X			X
Transparency			X			X
Technical Accessibility			X			X
Knowledge policy						X

Legend: X = the author use the dimension. If the box is emptly means that the author did not use the dimension.

In the following section, the performance of OCCs in terms of the dimensions of democratic quality will be presented.

The first two dimensions analyzed refer to the efforts made by the OCCs to increase participation and inclusion and reduce barriers to participation in the knowledge-making process at

71 Moreover, unconventional political actors and the goals of their websites are heterogeneous in comparison to the websites of political parties or parliaments, and this can also contribute to the variety of dimensions considered in the analysis of unconventional political actors.

72 For a presentation of the set of dimensions as defined in previous research see annex IV.

73 Vedres, Bruszt and Stark adopt a particular approach, instead of pre-defining dimensions for analysis and assigning them a democratic value, they list a set of features of the websites (i.e., e-mail account, mission statement, etc.), and then analyze the correlation between these, extracting clusters which represent the diverse styles of websites.

the platform. In this regard, an initial result from the large *N* analysis is that some OCCs make more effort to guarantee information and technical usability and accessibility than others. It is worth clarifying that both dimensions are considered in terms of inclusion in the process, that is once participants have engaged in the platform itself. Other important questions such as access to the Internet (digital divide) or/and education and training required to understand the workings or content of the platform are important conditions for the possibility of inclusive knowledge-making; however, they are left as aspects contextual to each specific OCC and so are not addressed in the analysis.

1. Information usability and accessibility to increase participation and inclusion

Information availability is the basis of collective knowledge-making and favors collective action. Although the availability of information alone is not enough to guarantee its possible use. Information usability is referred to as the "container" of the information, that is how the information is displayed and presented (International Organization for Standardization, 1991, 1998). Creating conditions for the equal usability and accessibility of the information reduces barriers to participation, favoring inclusion.

The information availability and usability dimension was analyzed by looking at the degree to which the information facilitates access and use, in concrete, I considered: 1.1 information usability; 1.2 information accessibility; and, 1.3 linguistic inclusion.

The volume of information available was also considered as a specific element of the analysis, however, as I could find no reasonable operationalization of the volume of information, it was eventually excluded from the final analysis.

1.1 Information usability

Information usability refers to the organization of information in a usable and easily accessible way for example through an explanation of the content in the platform or a search engine. Information usability facilitates information consumption, but also facilitates participation in the elaborating the information for the knowledge-making process.

From the analysis it emerges that information usability is an important aspect of the OCCs. All the cases have positive values of usability. In 70% of the cases, the OCCs have several (between 4 and 6) ways to facilitate using and searching for information.

It is beyond the scope of this research to evaluate the quality of the information and knowledge that OCCs create. Nevertheless, the communities themselves adopt mechanisms to distinguish the quality of the information and to highlight the information considered most valuable by the community. For example, in some cases the information most valued by the community is shown first. These efforts to distinguish the information most valuable to the community contribute to making the information more usable for the participant. A large percentage of the OCCs (88% of cases) have at least one mechanism for evaluating the quality of information.

1.2 Information accessibility and the inclusion of people with special needs

Information accessibility refers to the attributes of the platform that seek to accommodate different populations of participants and guarantee universal accessibility. More accurately, it refers to the effort of the community to reduce barriers to participation for people with physical disabilities. In this regard, the inclusion of populations with special needs is considered a sign of democratic organizing (Allan, 2003). In order to evaluate the accessibility of the platform a web accessibility test was used.74 According to the tests, there are frequent difficulties in accessing the OCCs' information. Most of the cases (80,9 %) have a high level of difficulty of access for people with disabilities. Furthermore, for the remainder (19,1.%) it is practically impossible for a person with disabilities to access the platform and this population is thus excluded from participating in the knowledge-making process. The *FLOSS communities,* which are concerned with developing software, are particularly committed to reducing barriers to accessibility.

1.3 Linguistic inclusion

The OCCs considered have a global scope, obviously including different linguistic populations. In this regard, the translation of information into different languages might expedite the use of the information and reduce barriers to participation in information re-development. Multilingualism is therefore considered a sign of the democratic basis of transnational communities' communication (Doerr, 2008, 2009). The indicator of multilingualism is defined by the number of languages in which the information is available according to the data on the websites. A total of 58% of the OCCs use only one language (the large majority English) while the rest, 42%, have information in more than one language. Nevertheless, 14 % of OCCs provide information in between 10 and 50 different languages.

2. Technical usability and accessibility to reduce barriers to participation

The dimension of technical usability and accessibility refers to the efforts made by the community in order to facilitate the use of the technology and reduce the barriers associated to the specific technology used to support the knowledge-making. For example, forums for welcoming new participants and introducing them to how the system works, or providing facilities for technical problem solving. A total of 16% of the OCCs do not contain any tools considered to facilitate and reduce the barriers linked to the use of the technology. Nevertheless, 68% of them provide two or three technical support channels.

74 The test used was the Web Works Accessibility Guidelines as defined by the World Wide Web Consortium (http://tawdis.net). The test analyses the whole platform and detects three types of accessibility problems: priority 1) impossibility of access for some users; priority 2) difficulty of access; priority 3) some difficulties of access. The indicator used was the ponderate sum of the test result in the three categories ((Number of Priority 1 problems x 3) + (Number of priority 2 problems x 2) + (Number of priority 3 problems)). There are different levels of analysis, AAA was used here.

3. Administration, transparent organizational structure and financial accountability

The dimension of transparency and accountability refers to transparent functioning and accountability in the provision of the infrastructure that hosts the collective action. High transparency and accountability implies that, first, the providers should make specific information related to transparency and accountability, concerning the legal status or finance for example, available to the participants. Second, provide contact data to enable the participants to contact the body in charge of providing the infrastructure both online and offline; and, third, transparency concerning knowledge policies, such as specifying the type of legal license of the platform.

3.1 Provision of a series of information related to transparency and accountability

The public availability of a series of information on the administration of infrastructure is also considered to be a sign of transparency. This refers to information such as legal statutes or organizational structure and finances; in addition, information referring to the platform itself (statistics). A considerable percentage of the OCCs examined in the sample (34%) do not provide any of the information linked to transparency and accountability.

3.2 Presence of contact and possibility of joining both online and offline

Another aspect related to transparency concerns the presence of possibilities to contact the infrastructure provider. The presence of contact details, particularly specific contacts for the different bodies or roles administering the infrastructure, indicates the willingness of the provider to be open to public scrutiny by creating direct channels of communication for platform participants. In this sense, the presence of contacts represented a step beyond unidirectional instruments of communication (such as newsletters) (della Porta & Mosca, 2006). Nevertheless, this set of indicators could also be considered a sign of openness to participation.

Some 10% of the OCCs do not provide any of the contact channels considered. The mean of information provided is 2,36 from the four sources considered.

3.3 Transparency concerning knowledge policy

The Internet challenges previous privacy procedures, opening several debates in the public forum. In this regard, privacy policy has attracted attention. Infrastructure providers have access to the personal data provided by the participants such as name, e-mail or data on their behavior. The conditions under which this data may be used by the provider is emerging as a participant’s "right" and thus a requirement in the quality of the transparency of the platform.

As to the question of transparency relating to knowledge policy, here this is considered as the presence of the legal license, the terms of use, the privacy policy plus the an explanation of latter.

The information concerning the knowledge policy is commonly available. A total of 80% of the OCCs display at least the name of the license used. Some 58% provided a detailed

explanation of the license and the authorship. Nevertheless, 14% did not provide any of the information on the knowledge policy considered.

4. Knowledge policy

While the previous section refers to transparency in terms of displaying the knowledge policy, this section refers to the knowledge policy itself. Previous empirical research on democratic quality has not considered the dimension of knowledge policy (Davis, 1999; della Porta & Mosca, 2005, 2009; De Landtsheer, Krasnoboka, & Neuner, 2001; Navarria, 2007; Norris, 2003; Gibson, Nixon, & Ward, 2003; Römmele, 2003; Sudulich, 2006; Trechsel, Kies, Mendez, & Schmitter, 2003; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2005a, 2005b), which I consider an important dimension. The knowledge policy dimension is linked to the copyright license and to the type of software used. Netenabler conditions are defined by a copyleft license and the use of FLOSS code, while blackbox conditions are defined by copyright and proprietary software.[75]

On the one hand, the importance of knowledge policy is linked to the observation that knowledge-making is the goal of OCCs. In this regard, the conditions of access and use of the resulting knowledge could be considered as a "right" of the contributors as "authors" and so subject to democratic organizing.

On the other hand, knowledge policy can be understood as referring solely to the conditions of access to the "knowledge outcome" of the community, yet from a broader perspective knowledge policy governs the relationships in online environments.

First, relationships in the online environment are founded upon the exchange of information which is subject to copyright law. The management of the information also governs the relationships that can be established online. In other words, the management of the information dictates the protocols of the relationships. Relationships are "restricted" to a confined copyright regime, but can flow freely if the management of information does not restrict the information flow.

Secondly, in large online interactions, the social contract between the parties is less defined by any direct agreement between them than by the platform's design. The code of the platform regulates the information exchange and the architecture of actions that can be developed (Castells, 2009; Lessig, 2000; Sartor, 2003). Open code platforms make the regulatory dimension more transparent, but also allow recoding or intervention in the regulatory dimension.

Third, and perhaps most importantly, there is a qualitative difference between relational settings in which the collective action is "locked" into the platform, and those where the collective action is free and autonomous with respect to the platform. If the platform cannot be reproduced, the community relationship is "closed" within the specific platform which is dependent on the provider. If the platform can be replicated, the relationships are free from the specific platform provider. FLOSS and copyleft licensing allow platforms to be replicated, while proprietary software and copyright regimes do not. In other words, the use of FLOSS and a copyleft license creates

75 Copyleft refers to the set of licences which favor a less restrictive information regime than traditional copyright.

conditions in which the community can have greater autonomy and freedom from the platform provider, as well as allow for the possibility of other combinations of collective relationships and interventions in the regulation of those relationships. The role of the provider thus evolves from being there "exclusively" to allow the collective action to happen. This is an essential aspect of community empowerment.[76]

With regard to the type of licenses used, copyleft is more common (68,1%) than copyright. In reference to the use of FLOSS versus proprietary software, 78 % of the OCCs use FLOSS, while only 18% use proprietary software.

5. Openness to participation in the platform

Participation is considered as both a condition for and a sign of democratic organization (della Porta, 2009; Paterman, 1970; Poletta, 2002). The OCCs are constituted by an administrative or provider body which provides the platform, and the platform which hosts the collective interaction. On the one hand, the participation in OCCs takes place through intervening in the information gathering and knowledge building of the platform. On the other, participation takes place through involvement in decision-making alongside the administrators or providers.

Unlike previous web analysis research (della Porta & Mosca, 2006; Navarria, 2007; Sudulich, 2006; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2006) and research on online community governance (Lanzara & Morner, 2003; Forte & Bruckman, 2008) which only consider participation in the platform, this research considers participation in both spaces. In particular, I will look at two dimensions (5) openness to participation of the platform and (6) openness to participation of the provider.

Openness to participation at the platform level is related to (5.1) the presence of channels for participation, (5.2) the protocols that guide those channels, and (5.3) the presence of information that facilitates the participation and integration of new participants.

5.1 Participation in the platform: Channels of participation

Participation in a platform takes place if there are channels present allowing interventions. Many websites are information-oriented and do not include any channels for participation. If a platform does not provide any tool through which a visitor can interact in the site, it is not considered participative. In this section, I shall look at whether the platform "opens" ways to host participation for visitors or not. For example, if it is possible to add comments in forums or upload materials or not. From the analysis of the presence of channels of participation in the platforms, it emerged that OCCs are very participative in terms of facilitating participation. Seven OCCs have

76 Copyleft type licenses are an innovative use of existing copyright law to ensure that work remains freely available. The GNU General Public License, originally written by Richard Stallman, was the first copyleft license to see extensive use. Creative Commons, a non-profit organization founded by Lawrence Lessig, also provides copyleft licenses under the Share Alike formula. See the Wikipedia entry on copyleft or consult the guide to licenses by Laurence Liang (2004).

positive scores for all six channels of participation considered; while five do not have any. The mean is around 4 different channels of participation (mean 3,5 from a score of 0 to 6). The OCCs can be considered very participative in terms of the number and variety of channels for participation they provide.[77]

5.2 Protocols of participation in the platform

Providing channels of participation is not the only aspect that refers to the participative potential of the platform. The rules or protocols of participation for those channels also define their participative character. For example, can everyone participate in a channel or only those fulfilling certain credentials?

The indicators for protocols of participation consider four aspects: 5.2.1) if all the pages are readable by all participants or if some sections are reserved to particular types of participants; 5.2.2) the type of policy of registration (from more permissive to less permissive). This refers to whether there is registration through moderation or if registration is automatic; 5.2.3) type of policy moderating the contributions with regards to the presence of moderation of new works before or after publishing, or no moderation and the automatic insertion of new contributions; and finally, 5.2.4), the role of participants by default, referring to whether (from less permissive to more permissive) participants are readers (meaning that the participant need only read), suggesters (that can suggest ideas), authors (who can create and edit their own work), or editors (who can edit the work of others). The protocols that guide participation in OCCs appear to offer incentives to participation in a high percentage of the cases. In 88% of cases all pages can be read by anyone; 80% of the registration systems allow automatic registration, with no filters, at the platform; 68% of the OCCs allow for the creation of the contributors own work. Furthermore, 48% allow participants to modify and edit the work of others, or common work. In conclusion, overall, the protocols of participation favor openness to participation in the platform. In 30% of the cases all the protocols lead to openness to participation.

5.3 Provision of information facilitating participation

Apart from channels for participation and protocols that offer incentives to participate, some information on how participation is organized can also be considered a useful prop. In this regard, welcoming messagers to encourage participation and/or list the channels available for this is the most frequent kind of information given (64%). The remainder of the indicators, that is,

77 OCCs generally use various channels of participation; however, it is worth mentioning that the OCCs vary particularly according to the specific channel of participation used. This makes it complicated to measure the participation in terms of channels of participation used. Depending on the goal of the community, one specific channel could be more appropriate than another, or one channel not apply, yet this may not be related to openness to participation but to the type of knowledge the community builds. For example, the building of software requires channels that are different to those needed to build an encyclopedia.

presentation of the history of the community (32%), set of goals of the platform (32%), and a calendar of upcoming activities (26%) have much lower percentages. Overall, the indicators for information that enables participation appear to be quite low, as 20% of the OCCs do not provide any of those considered. In addition, only 8% of the cases provided all four types of information considered.

6. Participation in the provider space

The OCCs can also be classified in terms of how their provision spaces function. There is a qualitative difference between the OCCs where it is possible for participants to present themselves as candidates for or be part of the administrative body and those where such options are not available, in other words between “closed” administrative spaces and “open” or accessible participative spaces.

Participation in the provider space is considered closed where it would require a capital investment or being a member of an institution (such as a university). Participation in the provider space is considered partly open where this depends on the fulfilling of certain criteria related to participation in the platform (such as a number of contributions). It is considered open when participation in the provider space is possible for anyone, that is, participation is regulated through self-selection.

A total of 38% of the OCCs considered have closed administrative spaces and 62% open or accessible administrative spaces. Those open to participation in the provider space may be differentiated according to the types of functioning of those spaces. A total of 60% of the OCCs with open provider spaces have a board, while the remaining 40% do not. The absence of a board could be explained by the lack of differentiation or hierarchy between the members of the administrative space and/or because these OCCs are informal.

Overview of the OCCs performance on dimensions of democratic quality

Several aspects emerged from the analysis of the performance of OCCs on the dimensions of democratic quality.

First, it is worth explicitly mentioning that in contrast to other forms (such as expert based forms of knowledge-making) OCCs substantially reduce the barriers to access to information and knowledge and therefore represent more inclusive forms of knowledge-making. However, returning to an internal examination of the OCCs, the level of inclusion of these forms and the efforts made by each OCC to increase inclusion for the whole population and reduce barriers depend upon the specific issue considered. There is no behavior common to all the OCCs, either in terms of inclusion of types of information usability or in technical accessibility.

In terms of inclusion in terms of information usability, the OCCs perform well in making information easy to search for and use, plus they are also inclusive in terms of enabling the

evaluation of the quality of information. However, OCCs do not perform consistently with regard to multilingualism, that is, some have information in more than 10 languages, allowing the inclusion of multiple linguistic communities, but the majority of OCCs only use English. In other words, a knowledge of English appears to be a condition, and thus a barrier, for participation in and use of most OCCs of global scope. Lastly, OCCs are not inclusive in terms of accessibility for people with disabilities. It is almost impossible for people with special needs to use and participate in most of the OCCs analyzed here.

In terms of inclusion by reducing the barriers to use and access the technology which supports the collective action, the OCCs again vary. Some OCCs seek to reduce the barriers linked to technology, however, many do not.

Third, pertaining to the transparency and accountability of the administration or provision of the infrastructure in which the collective action takes place, OCCs perform best on the indicator of accessible knowledge policy. Providing contacts for reaching the provider is also quite common, although some OCCs, particularly the commercial ones, do not publish any contacts. Finally, the aspects which are worthy in terms of transparency are the provision of legal and funding information. The generally bad performance of OCCs on transparency and accountability could be associated to the novelty of the phenomenon and the lack of regulation for providers of platforms of online participation.

Fourth, concerning knowledge policy, copyleft licensing and FLOSS are more common than copyright and proprietary software.

Fifth, on openness to participation, OCCs are very participative, both in terms of providing channels for participation and in terms of the openness of the protocols that guide it. However, OCCs are less virtuous on the explicit provision of information that could facilitate participation.

Finally, concerning participation in the provision of the platform, more than half of the cases are open to community involvement in platform provision, while less than half are closed. Amongst those open to participation, half follow a formal logic, with a board and some requirements that must be met before becoming a member, and the other half follow an informal logic, that is, they do not have a board, and participation is regulated through self-selection.

Another finding which emerges from the analysis is the presence of several **styles of democratic quality** in OCCs. The OCCs do not approach the different democratic dimensions in the same way. In other words, not all the OCCs try to exploit all the dimensions of democratic quality. Instead, some seek to exploit certain dimensions, and other OCCs, others. This result emerges from the analysis of the correlation between the dimensions of democratic quality. For this goal I built an index per each dimension of democratic quality (information provision, technical accessibility, transparency and accountability, knowledge policy, openness to participation at the platform, and openness participation at the provision body). The index per dimension of democratic quality resulted from the normalization and sum of the indicators per each dimension (in some

cases with a preponderance of indicators).[78] From the analysis of the correlation between the indexes of the dimensions of democratic quality, it emerged that not all the dimensions are correlated (see table IV on correlations among the dimensions). Additionally, significant correlations emerged with regard to the different aspects of each dimension, rather than between the dimensions. In other words, OCCs display several styles of searching for democratic quality. Some OCCs stress some dimensions while other OCCs put more emphasis on other dimensions.

Table IV. Matrix of correlations of dimensions of democratic quality (non-parametric correlation, Tau_b of Kendall)

INDEXES		*Information*	*Technical*	*Transparency*	*Knowledge*	*Participation*	*Provision*
Information	Coefficient	--	**,256***	**,233***	,009	**,295****	-,149
	Sig. (bilateral)	--	,022	,024	,940	,004	,197
Technical	Coefficient	**,256***	--	**,256***	,059	**,350****	**-,259***
	Sig. (bilateral)	,022	--	,022	,659	,002	,038
Transparency	Coefficient	**,233***	**,256***	--	,218	**,231***	**-,232***
	Sig. (bilateral)	,024	,022	.--	,077	,024	,043
Knowledge	Coefficient	,009	,059	,218	1,000	,385**	**,356****
	Sig. (bilateral)	,940	,659	,077	.	,002	,010
Participation	Coefficient	**,295****	**,350****	**,231***	**,385****	1,000	,105
	Sig. (bilateral)	,004	,002	,024	,002	.--	,357
Provision	Coefficient	-,149	**-,259***	**-,232***	**,356****	,105	--
	Sig. (bilateral)	,197	,038	,043	,010	,357	.

Legend: **. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed); Without * or ** is non-significant correlation.

These research results corroborate that, like actors with mainly offline bases, such as political parties, SMOs and non-governmental organizations, collective online actors also present several styles of democratic quality (Davis, 1999; della Porta & Mosca, 2005, 2009; De Landtsheer, Krasnoboka, & Neuner, 2001; Navarria, 2007; Norris, 2003; Gibson, Nixon, & Ward, 2003; Römmele, 2003; Sudulich, 2006; Trechsel, Kies, Mendez, & Schmitter, 2003; Van Aelst & Walgrave, 2005; Vedres, Bruszt, & Stark, 2005a, 2005b). Furthermore, similar correlations

78 The following indexes were used to calculate the dimensions. Index of information quality and usability = (5 indicators of information quality (all with value 0 or 1) / 5) + (8 indicators of information search (all with value 0 or 1) + (results accessible test / 761) + (number of languages of the interface / 50). It is worth noticing that the sum of the indicators of information quality and usability previously required the unification of the scale, which was calculated with the formula: x/maxim of x. Index of Technical usability and accessibility = sum of 3 indicators (all with value 0 or 1). Index Transparency = (6 indicators of transparency information (all with value 0 or 1) + (4 indicators of transparency in contacts (all with value 0 or 1) + (3 indicators of knowledge transparency (all with value from 0 to 1)). Index knowledge policy = Sum of 2 indicators (both with value 0 to 1). Index participative platform = ((6 indicators of participation mechanism (all with value from 0 to 1) + (4 indicators of type of protocols (4 with value from 0 to 1 and 1 with value 0 to 2) + (4 indicators integration information (all with value from 0 to 1). Index participative provision = 1 indicator (value 0 to 1). See annex I for a further specification of the indexes built.

between information usability, technical accessibility, participation in the platform and transparency are revealed by the empirical research developed by della Porta and Mosca on SMOs (2006).[79]

Importantly, while previous researchers have not considered dimensions related to infrastructure (knowledge policy and openness to participation in the provision space), this research throws light on the importance of these dimensions.

All the styles of democratic quality present in the OCCs analyzed tend to pay attention to openness to participation in the platform. Openness to participation is correlated with all the dimensions (information provision, technical accessibility, transparency and knowledge policy), but not with the provision type. Independently of whether the provider is open or closed, openness to participation at the platform remains present in terms of channels for participation and rules for participation. Although open provision does equate with more effort to facilitate information for new participants. In other words, OCCs are characterized by their participative character. However, the dimensions related to how the provision space is managed are influenced by how OCCs perform on the other dimensions or sub-dimensions, and define different styles of democratic quality. On the one hand, OCCs based on closed types of provision exploit some sub-dimensions of information usability, technological accessibility, and transparency and accountability. On the other hand, OCCs based on open types of provision tends to stress knowledge policy. In other words, OCCs can be classified according to infrastructure provision, which shapes the way in which dimensions related to the community platform are fulfilled. This sheds light on my first general hypothesis: infrastructure governance shapes the community generated.

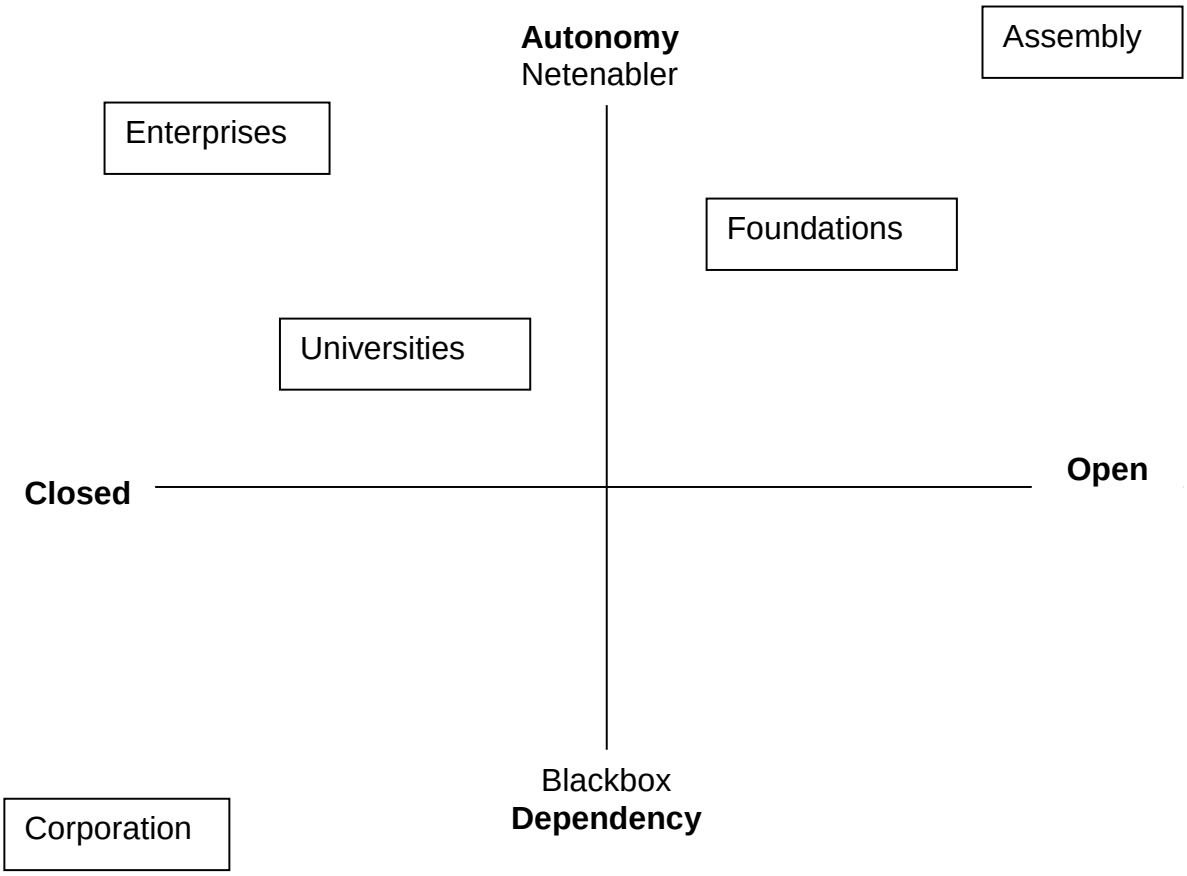
V. II. Infrastructure governance: models of infrastructure provision for collective action

The importance of governance infrastructure in OCCs emerged trom the large *N* analysis of democratic quality. Governance infrastructure refers to platform provision and more generally to the infrastructure in which the collective action takes place. Platform provision involves controlling the servers and domain name and other important components which sustain the interaction. Online collective action in the form of OCCs depends on these infrastructure features. Previous research has not considered infrastructure governance; however, this research focuses on exploring the effects of how infrastructure is provided.

From the sample, five provision models can de defined: university network, corporation service, mission enterprise, autonomous representational foundation and assemblearian self-provision models. These five models are defined according to two main axes concerning their infrastructure provision strategies: open *versus* closed to community involvement in infrastructure provision, and freedom and autonomy *versus* dependency on the infrastructure (netenabler *versus* blackbox).

79 The only contrasting aspect between these results and those of della Porta and Mosca is that in the case of OCCs, transparency and technical accessibility are correlated, whilst they are not for SMOs (2006).

Figure III. Models across the two axes of infrastructure governance



Legend: Y = Freedom and autonomy of community from the provider; X = Involvement of the community in the provider body. See figure IV for a further specification of the distribution of the cases and models across the two axes of infrastructure governance.

Concerning, **the open *versus* closed to community involvement in the provision body distinction** (axis X), there is a qualitative difference between OCCs in which it is possible to take part in the provider body, which is the case of the foundation and assembly models, and those in which this is not possible, as is the case for the university network, corporation and enterprise models, as presented in figure III.

Among the open OCCs, there is also a substantial difference in the levels and ways in which the provider body is open in terms of **formality *versus* informality**. While the foundation model is based on the formal organization of participation in provision and establishes more, the assembly model is based on informal organization and participation is less restricted. The operationalization of formality is based on the presence or otherwise of a legal entity, and the limitation (or not) of participation to members of a board.

On this axis, a distinction can also be established between **for-profit strategies *versus* non-profit strategies**. Profit strategies are by definition close to community involvement. corporation and enterprise models are for-profit, while university network, foundation, and

assembly models are non-profit. The for-profit *versus* non-profit characteristic is operationalized by looking at the character of the legal entity of the providers.[80]

In order to clarify the meaning of openness to community involvement in the platform, it is worth mentioning that a salient characteristic of the OCCs is the small dimension of their provision bodies. The ratio between the number of people required to create the infrastructure for online collective action and the total number of people involved in the collective action is small. From the cases with available data, 70% number less than 30 people in the provision body. For each person in the provision space there is a mean of 55,906 people registered at the platform. If the number of people registered at the platform increases, the need for people in the provision body also increases[81]. This is so independently of whether the model is open to community involvement in the provision space or not. For example, Wikipedia, which is a model open to community involvement, is visited every day by millions of people, and has 11,429,181 registered participants. However, the number of people involved in the provision of its infrastructure is around 50.[82] The same can be said with regard to closed providers. Facebook is the second most visited site on the Web and has more than 350 million registered users; however, the number of people involved in its provision is around 1,000.[83] These numbers regarding the size of the provision bodies refer to "being part" of the provider body. However, there other more sophisticated channels of openness in infrastructure administration could also be considered. For example, some providers put certain questions to the community on particular decisions the provider has to make, for example consulting the community on a change in the license, a change in the terms of use or a change in the interface design. These more sophisticated forms of openness will be explored in greater depth through the case studies. For the large *N* analysis, openness to provision refers to the possibility of taking part in provision.

With this data, which sheds light on the small size of the provision bodies in OCCs, I aim to make it clear that the open character of provision does not mean that everybody in the platform gets involved in the provision body, but merely that the *possibility* for people to involved in provision exists.

The **netenabler *versus* blackbox** (axis Y in Figure III) refers to knowledge policy. Netenabler conditions are based on a copyleft license and FLOSS code; on the contrary, blackbox conditions are based on copyright (restrictive access) and proprietary code. Blackbox conditions refers to the fact that the coder is unknown to the user, in other words, the user has no way of knowing what the program he or she is using does, plus, the user is trapped in the platform as he

80 However, the character of the legal entity is not the only aspect which could be considered in identifying for-profit oriented providers. In this regard, in the case studies a more in-depth analysis will be carried out concerning the for-profit tendencies of OCCs, and more aspects will be explored. The informal groups with no legal entity are considered non-profit.

81 From a sample of 18 cases in which data on provider sizes was available, there is a correlation between the increase in number of people in the community and in the platform (Coefficient 679**).

82 Source Wikimedia Foundation staff web page. Retrieved April 10, 2009 from http://wikimediafoundation.org/wiki/Staff

83 Source Alexa.com ranking. Retrieved January 1, 2010 from http://www.alexa.org

or she can not easily migrate data somewhere else. Only the corporation model is blackbox. The other cases are netenabler models, albeit to different degrees.[84]

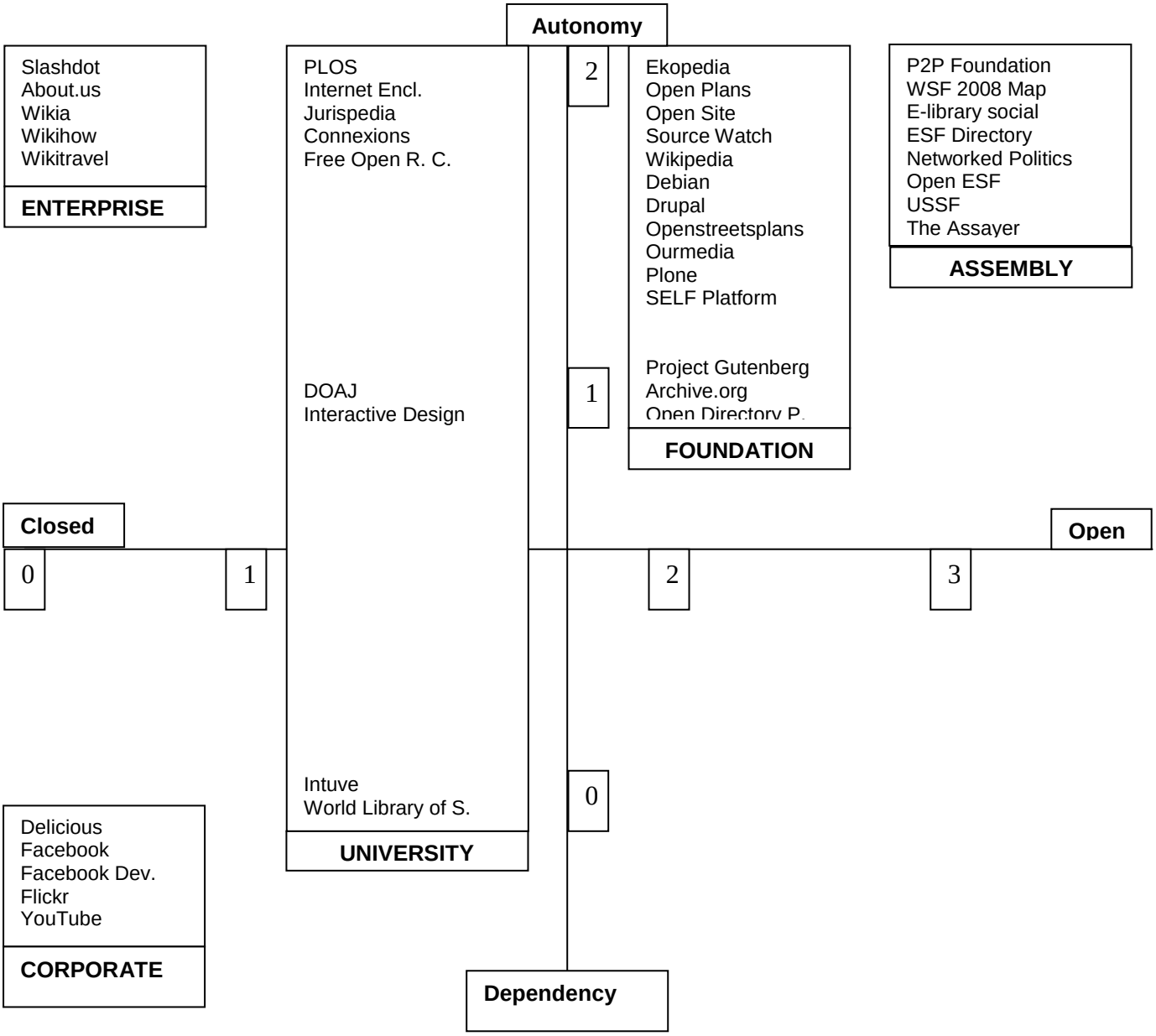
It is worth clarifiying that the importance of the dimensions linked to infrastructure provision emerged from the analysis of the correlation between the 6 dimensions of democratic quality. That is, according to the analysis of correlations among the 6 dimensions of democratic quality, the dimensions of democratic quality help to explain the performance of the other dimensions. The correlation between the dimensions of infrastructure governance and the other dimensions not linked to infrastructure governance led me to consider the importance of the dimensions of infrastructure provision. However, in order to build the five models of infrastructure governance, the dimensions of democratic quality not linked to infrastructure provision (that is, information provision, technical accessibility, transparency and accountability, and openness to participation at the platform) were not considered. In other words, the five models of infrastructure governance are the result of only two dimensions of infrastructure governance.

In sum, in order to define models of infrastructure provision I consider the two dimensions of democratic quality linked to infrastructure provision (the open *versus* closed to community involvement in the provision body distinction (axis X in Figure III) and, netenabler *versus* blackbox (axis Y). According to how the cases in the sample perform along these two dimensions, I classified the sample as distributed in five clusters of experiences, which constituted the five models of infrastructure governance.

In order to place the models as seen in Figure III, I used the quantitative value of their performance on the two axes. Figure IV shows the distribution of the sample along the axes, and the resulting value coordinates for each model. Assembly models group the cases positioned at coordinates 3,2, that is the maximum values for both openness to infrastructure provision and level of freedom and autonomy of particiants. The foundation model included the cases found at 2, 1 or 2,2; the university model includes the cases positioned at coordinates 1,3, 1,2 and 1,0, that is the university model is a closed model, but it varies in terms of levels of freedom and autonomy. The enterprise model represents the cases situated at the coordinates 0,2, that is the maximum levels of closeness to involvement in provision decision-making but also maximum levels of freedom and autonomy of participants in the infrastructure.Finally, the corporate model groups the cases situated at the coordinates 0,0, that is the more closed level and the lowest levels of freedom and autonomy.

84 It might be worth mentioning that among the netenabler models there is more variability in terms of the type of license than in software. In other words, FLOSS is more easily adopted than free licenses.

Figure IV. Distribution of the sample and the models across axes of infrastructure governance

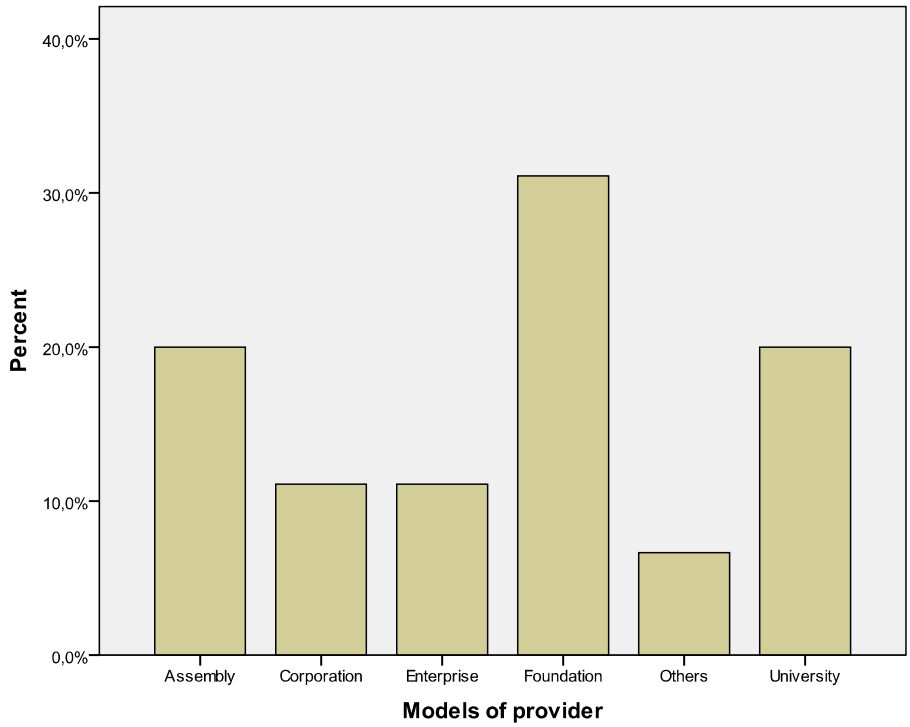


Legend: X = Level of openness to the community involvement in the provision body. X = 0 refers that community members can participate at the provider body only by doing a capital inversion; X = 1 by becoming a member of an institution; X = 2 according to fulfilling merits or becoming a member of an association (may require the payment of a low fee); X = 3 refers to participation by self-selection (everybody who wants to join). Y = Level of freedom and autonomy of participants from the infrastructure provider. Y = 0 Proprietary software and copyright license; Y = 1 use of FLOSS or copyleft license; Y = 2 use of FLOSS and copyleft license.

Concerning the distribution of the models (see figure V), in the sample analyzed the foundation model is the most common (31%); followed by the assembly and university network modelss (20% each); and at joint last the corporation and enterprise models (11% each). However, the OCCs promoted by corporations are more widely known.

There are some cases that do not belong to any of these models (6,7%). Their lack of adherence is largely related to the netenabler versus blackbox axis. For example, there are two cases of open providers based on blackbox conditions.

Figure V. Distribution of models of infrastructure governance



In this section, each model of infrastructure governance will be presented in detail. References to how each model performs differently with regard to the other dimensions of democractic quality will be also made. The multiple comparison of the five models is developed by comparing the mean performance of each model on each dimension as compared to that of the other models. The comparison of how the cases perform on each of the dimensions allows us to build a ranking system for the models (see Table V). It is worth mentioning that the reduced size of the sample (50) may make finding correlations difficult.[85] The presentation of each model will be carried out according to the data presented in table V.

85 The comparison of the mean scores of each of the models was calculated using the one-way ANOVA formula. The mean difference is significant at the 0.05 level.

Table V. Ranking of each model based on performance on the dimensions of democratic quality (compare means, One-Way ANOVA, Tamhane's T2)

RANKING (MEAN)	*Participation provision body*	*Netenabler versus backbox*	*Information provision*	*Technical Accessibility*	*Transparency*	*Platform openness to participation*
Foundation	Open(2,0)	3 (1,7857)	2 (1,3651)	2 (2,5714)	1 (7,2143)	1 (12,0357)
Enterprise	Closed (1,0)	2 (1,8000)	1 (1,5532)	1 (2,8000)	3 (6,6000)	2 (11,4000)
Corporation	Closed (1,0)	5 (,0000)	3 (1,3392)	3 (2,4000)	5 (3,6000)	4 (9,4000)
University	Closed (1.0)	4 (1,3333)	4 (,9881)	4 (1,6667)	2 (6,6667)	5 (7,1111)
Assembly	Most open(2,8)	1 (2,0000)	5 (,9152)	5 (1,3333)	4 (3,7778)	3 (10,2222)

Legend: The scale runs from the best performance (1) to the worst (5)

Mean values in brackets

In order to extract the ranking of each model based on performance on the dimensions of democratic quality, the mean score for each model's performance on each dimension was calculated and then compared. The model with the highest mean is the first in the ranking. For example, the cases based on the enterprise model score a mean of 2,8 (of a maximum of 2) on technical accessibility. As none of the other models scores higher on this dimension, we can conclude that the enterprise model is the first in the ranking for performance in terms of technical accessibility, according to the mean comparison of the models. The same can be said for the ranking of the other dimensions. With SPSS, this ranking through multiple-mean comparisons was calculated using One-Way ANOVA (Tamhane's T2).

The **corporation model** applies to cases of communities owned by communications companies with large pools of technological skills such as Google, the provider of YouTube. The other cases which are characterized as corporation models are: Facebook (a social networking site); Facebook developers (which is a platform for software programming linked to Facebook) which are both provided by the Facebook company; Delicious (a social bookmarking site); and Flickr (a photo-sharing repository), the latter two are both provided by Yahoo!. Flickr, will be analysed in detail in the section of the thesis that deals with case studies.

The corporate model of infrastructure governance is characterized by a provider body closed to participant involvement and based on blackbox conditions.[86] It follows a for-profit strategy. Participants are "trapped" in the platform, as the copyright and proprietary software framework restricts the freedom and autonomy of the participants in the platform.

According to the analysis, the corporation model performs better on information usability and technical accessibility than the assembly and university models, but worse than the enterprise and foundation models. In terms of sub-dimensions of information usability, the corporation model performs better on the sub-dimenstions. However, the corporation model does not perform well in

86 In the sample, corporation models are significantly more likely to be blackbox in contrast to the enterprise model, the foundation model and the university network model. The mean difference is significant at the 0.05 level.

terms of information accessibility.[87] This result contrasts with the corporation model's characteristic discourse of high "professionality" in service provision.

The corporation model is less transparent than the other models.[88] Finally, it is more open to participation in platform provision only compared to the university model. But it is slightly less open to participation in platform provision than the foundation, enterprise and assembly models.

The **university network model** of infrastructure governance describes an alliance between several university bodies to provide a platform which facilitates the free accessibility (through an open access form) of academic research materials or specialist results. The university network model is less closed than the corporation model. However, only universities can get involved in the provision of the space. Additionally, in contrast to the corporation model, the university model is non-profit, and, importantly, it is partially netenabler. Partially netenabler means that only 70% of the cases are fully netenabler.[89] In this regard, university models are less netenabler than assembly, enterprise and foundation models.

An example of the university network model is the Public Library of Science (PLOS), which is a library of open access articles. Another example is Jurispedia, which is an encyclopedia on different national legal systems. The other examples of the university network model in the sample are Worldcat library search, the Directory of open access journals (DOAJ), Information Visualization (a repository of knowledge on visualization techniques), Connexions and Intute: Education and Research (both resource repositories on education and research resources), Free Open Research Community (a library of FLOSS research articles), and an Internet Encyclopedia. In terms of democratic styles not linked to provision, the most accentuated aspects of the university networks are that they are the least open to participation in the platform. They are even significantly less participative than the foundation models. According to these results, this model seems to be driven more by providing access to resources than to raising participation. Additionally, they are less multilingual. The lack of multilingualism in the university model could be related to the preponderance of English within the confines of the university environment.
In terms of information provision and technical accessibility, universities only perform better than the assembly model. Finally, university models are significantly more transparent than assembly models, considerably more transparent than corporation models and only slightly more transparent than enterprise models. However, they are slightly less transparent than the foundation model.

The **mission enterprise model** is characterized by being for-profit, and hence closed to participant involvement. Importantly, the enterprise model is based on netenabler conditions, which favor the autonomy of collaboration. Furthermore, the enterprise model guarantees more

87 The data contrasting the mean scores for each model by subdimension is not provided here due to the large dimensions such a table requires.
88 Corporation models are notably less transparent than the foundation, enterprise and university models, and slightly less transparent than assembly models. Furthermore, the corporation model is significantly less transparent than the foundation model.
89 There are two cases that only fulfill one of the criteria considered necessary to be a full netenabler (copyleft license and FLOSS), DOAJ and Information Visualization, and two cases which are not netenabler, Worldcat library search and Intute: Education and Research.

netenabler conditions than the foundation model. The enterprise model is the case of startups, which maintain independence from big communications companies. It is a strategy for developing new business models which are compatible with netenabler conditions. One example is Wikihow, a how-to collaborative manual, or Wikitravel, a collaborative travel guide, both provided by small start-ups. The other cases demonstrating the mission enterprise model in the sample are Slashdot (a collaborative news site), aboutus.org (a directory of websites), and Wikia (a wiki farm).

In terms of democratic qualities not linked to provision, these models perform best in terms of information usability and technical accessibility. Particularly, they perform best on several of the sub-dimensions of information and technology usability and accessibility, specifically in terms of information searchability, information accessibility for disabled people and multilingualism.

They do not perform badly in terms of transparency. This model is more transparent than the corporation and assembly models. However, they are substantially less transparent than foundation models and slightly less transparent than university models.

In terms of openness to participation in the platform, unlike the other cases as judged by their mean scores, they are participative, although slightly less so than the foundation models. They are particularly open to participation in terms of the protocols that guide participation.

The **autonomous representational foundation model** is characterized by a provider body which is (relatively) open to participant involvement as it uses some formal filters. This model is also characterized by promoting the freedom and autonomy of collaboration (netenabler). Additionally, they are non-profit. Being relatively open to participant involvement implies that they are formal, and not open in terms of the self-selection of participants, but open in terms of filters of requirement. In this regard it could be considered a hybrid form (partly open, partly closed). OCCs following this model are less open than the assembly model which is based on total openness of the provision body. They are also less netenabler than the assembly and enterprise models. The foundation model comprises the cases of Wikipedia, a collaborative encyclopedia, and FLOSS communities, which in this sample includes the cases of Debian, Drupal, Open Plans, and Plone. The other examples of the foundation model are Open Directory project (a directory of websites), Archive (a multi-media archive), Project Gutenberg (e-books repository), Ekopedia (a wiki on alternative lifestyles), Open site (an Internet encyclopedia), Ourmedia (a collaborative news platform), SELF platform (on FLOSS documenting), and Openstreetsplans (collaborative mapping).

After the enterprise model, the foundation model performs best in terms of information usability and technical accessibility. In addition, the foundation model is the best in terms of transparency. Comparing the mean scores, it is the most transparent model, particularly in terms of the provision of special information. It is significantly more transparent than the corporation and assembly models.

They are the most open to participation in the platform.[90]

90 The foundation model is significantly more participative than the university model. They promote openness to participation in the platform, particularly in terms of providing mechanisms for open participation.

The **self-provision assembly model** is characterized by being the most open in terms of provision. A self-selected community of participants can be part of the provision body in this model. It follows an informal organizing logic (without a board or legal entity) and is non-profit oriented. Additionally, the assembly model assures the most netenabler conditions. The assembly model applies to OCCs promoted within the framework of the GJM; for example, those promoted by the social forums, such as a map of a day of action, BioTech Indymedia, an open publishing media site specializing in biotechnology, or the calendar of actions, Protest.net. Additionally, there is one case that falls into the definition of this model where provision is managed by a single person. This is the case of The Assey, an archive of specialist articles. Finally, other cases of the assembly model that form part of the sample are: p2pfoundation.net (a repository on P2P), Networked Politics (collaborative research on new forms of political organizing), and E-library for social transformation. In addition, there are a variety of sites linked to the social forum process at a variety of levels: global (WSF 2008 Map of actions, and WSF Process); European, (the ESF Directory of organizations, and Open ESF (an organizational networking platform)), and United States (USSF).

The assembly model is the third most participative, after the foundation and enterprise models.[91]

The assembly model is the worst in terms of information usability and technical accessibility. It is significantly less transparent than the foundation and university models. It is also less transparent than the enterprise model. However, it is slightly more transparent than the corporation model. In other words, the assembly model is the worst in terms of environmental inclusivity (information provision and technical accessibility), and almost the worst in terms of transparency.

The results for the foundation and assembly models corroborate the results of della Porta and Mosca in regard to SMOs (della Porta & Mosca, 2005). According to these authors information quality and transparency are correlated with formality. For OCCs too the formal foundation model performs better in terms of information quality and transparency than the informal assembly model.

In conclusion, in terms of the mean scores for **information provision** and **technical accessibility**, enterprise models are the best in fulfilling these two functions, followed by the foundations and corporation models. The assembly model is the worst in terms of these dimensions. In terms of **transparency**, the foundation model is the best (followed by the enterprise model). The corporation is the worst model, but the assembly model is also relatively close to the corporation model in terms of limited transparency. With regard to **openness to participation in the platform**, the best model is the foundation model with the enterprise model performing similarly well. These are followed in the ranking by the assembly and corporation models. Finally, the university model is the least participatory and significantly less participatory than the foundation model.

91 It is slightly more participative than the corporation model, and substantially more so than the university model.

V. III. Explanatory analysis: the effect of infrastructure governance on community size, collaboration and community self-governance

The previous section presented the models of infrastructure governance and their democratic styles. This section will commence with an explanatory analysis of how infrastructure governance relates to community size, collaboration and self-governance. *Do corporation strategies attract bigger communities? What are the conditions for complex collaboration? Is openness to infrastructure provision linked to community self-governance?* These and other questions will be addressed in the following sections.

V. III. I Participation levels: how does infrastructure governance affect participation increase? How are participation levels managed in different online environments?

The question of participation levels has been an important element of the discussion on democratic organizing for a long time (Michels, 1962).

The size of the community of the OCCs refers to the number of people involved in community activity. From the data available from the sample, the size of OCCs (data available only for numbers of people registered) can range from 50, in the case of Elibrary for social transformation, to 350 million people in the case of Facebook. However, more frequently OCCs number 1000, some 10,000 or some 100,000 registered members. [92]

For several reasons, the more people use (or produce) the information resource more successful the OCC will be considered. The strength of motivation for contributing to OCCs is usually proportional to the size of the community. As the size of the potential audience increases, so does the attraction of writing and contributing. As more people begin to participate, the aforementioned motivation will also increase, creating a virtuous cycle in which more participation begets more participation, and the information resource's value is linked to its number of participants. In conclusion, high levels of participation are considered positive and a sign of success in OCCs.

This should not give the illusion that community sizes are unlimited. On the contrary, the size of an OCC depends on its potential "market", which is shaped by Internet penetration, visibility (Google search rankings), and interest in the specific issue or activity to which the community is dedicated. For example, the Free Open Research Community case's (opensource.mit.edu) goal is the creation of a library of FLOSS research articles. The number of people interested in FLOSS research, and indeed the total number of articles dedicated to FLOSS is limited, as well as being

92 The growth of participation levels can be associated to aspects other than the number of people involved. For example, OCCs can grow in terms of content, the diversity of people involved, emotional links within the community, increases in quality of the work or content, or in notoriety. However, in this research I refer to the growth of participation levels only in terms of the number of people involved.

limited to the size of this OCC. In contrast, the number of people and content that a video repository such as YouTube can attract is substantially larger.

OCCs tend to follow a growth curve with an initial period of slow but constant growth, followed by a period of intense growth and finally, a period of stability.[93] The stability period generally comes about when the contents of the OCCs are built and the OCCs goals then change, aiming to maintain the work or content, which requires less participation. For example, Wikipedia grew only slowly for the first 3 years of its existence from 2001 to 2003, followed by intense growth from 2003 to 2009 (Zachte, 2009). In 2009, a discussion was opened at Wikipedia because some indicators showed flat growth.[94]

It is worth mentioning **problems of size and growth operationalization.** The total size of the community in an OCC refers to the total number of visitors to the platform. The size of participation takes into account considers visitors who do not take action nor intervene in the work or content. Although each action taking place in an online environment can be recorded and measured, and the size of the community easily recorded, data on size is not always publicly available. Furthermore, when data on the total number of visitors are available, they are not always presented in similar ways. The OCCs use different technological solutions and it is difficult to define common indicators for all them.

As the number of visitors was not available on most OCC sites, an alternative indicator was adopted. Each site's Alexa ranking (a ranking of the most visited and connected Web sites) was taken as a measurement of size. Nevertheless, using Alexa rankings as an indicator of community size presents several problems. Alexa is more a measure of "success" and visibility than the number of people mobilized. In order to measure growth over time an index was built. The index of growth over time was based on the difference between the size in 2010 to the size in 2008.

Finally, concerning the central question of the **effect of infrastructure governance models on community size**, the comparison of mean scores for the Alexa Ranking for each model allowed me to build a scale of community size for the models (see data in Table VI).

In order to extract the ranking of each model based on size, the mean of Alexa performance between the cases of each model was calculated (with the analysis of multiple means comparison One-Way ANOVA, Tamhane's T2). Once the mean per each model was calculated, the ranking was built comparing the means of the models. The model with a lower mean is the first in the size ranking.

93 Growth in OCCs is forecast using the Bass diffusion model. The Bass diffusion model was originally conceived to describe the process by which new products are adopted depending on the ratio between users and potential users.

94 In fact, the indicators which showed no growth were the numbers of new editors of more than 5 editions a month in the English and German versions of Wikipedia. Among the reasons suggested to explain the lack of growth were 1) limited work. Most work is already covered in the English and German versions of Wikipedia and there are fewer changes to add. 2) There are more policy (bureaucracy) and people-know-people dynamics, which makes the incorporation of new participants more complex. 3) Limits of the usability, that is, the platform not being accessible for many people, among others.

.

Table VI. Ranking of infrastructure governance models: effects on size 2010 (compare means, One-Way ANOVA, Tamhane's T2)

RANKING (MEAN)	*Ranking 2010*	*Std. Deviation 2010*	*Alexa Ranking 2008*
Corporation	1 (101,25)	177,068	286,50
Enterprise	2 (1396,40)	1503,032	Missing data
Foundation	3 (263096,86)	721172,951	201364,08
University	4 (198585,25)	237124,548	206204,88
Assembly	5 (6809096,83)	1,046E7	4124503,86

Legend: The scale ranges from best performance (1) to worst (5)

Mean Alexa Ranking in brackets

The corporation model creates the largest communities. Comparing the coverage of the different models, the corporation model creates larger communities than the rest. Corporation model communities are much bigger than those of the assembly model, the university and foundation models, and just slightly bigger than those of the enterprise model. The Web 2.0 explosion, referring to very successful platforms provided by large corporations, such as Facebook, Flickr or YouTube, with their millions of participants, could explain this result. The corporation model's hegemony in terms of creating the biggest communities is reinforced over time from 2008 to 2010. These results also imply that blackbox conditions generate larger communities.

The mission enterprise model comes second in the ranking and is relatively similar to the corporation model.

The third in terms of size of communities is the foundation model.[95] The foundation model appears to have witnessed a reduction in community sizes from 2008 to 2010. The foundation model is followed after a large interval by the university model, and then, after an even larger interval, the assembly model.

In this regard, the assembly model creates the smallest communities. Although it should be mentioned that this model records the greatest variability in sizes. This trend, whereby the assembly model generates smaller communities than all the other models, is significant for all the cases in 2008 and seems to be reinforced over time from 2008 to 2010. However, the reinforcement of this tendency over time cannot be calculated with any high degree of accuracy because several of the assembly cases actually ceased to exist between 2008 and 2010.

It is interesting to note the results of the effects of infrastructure governance and size over **time**.[96] Here, time refers to the founding year of the OCC and the age of the OCC.

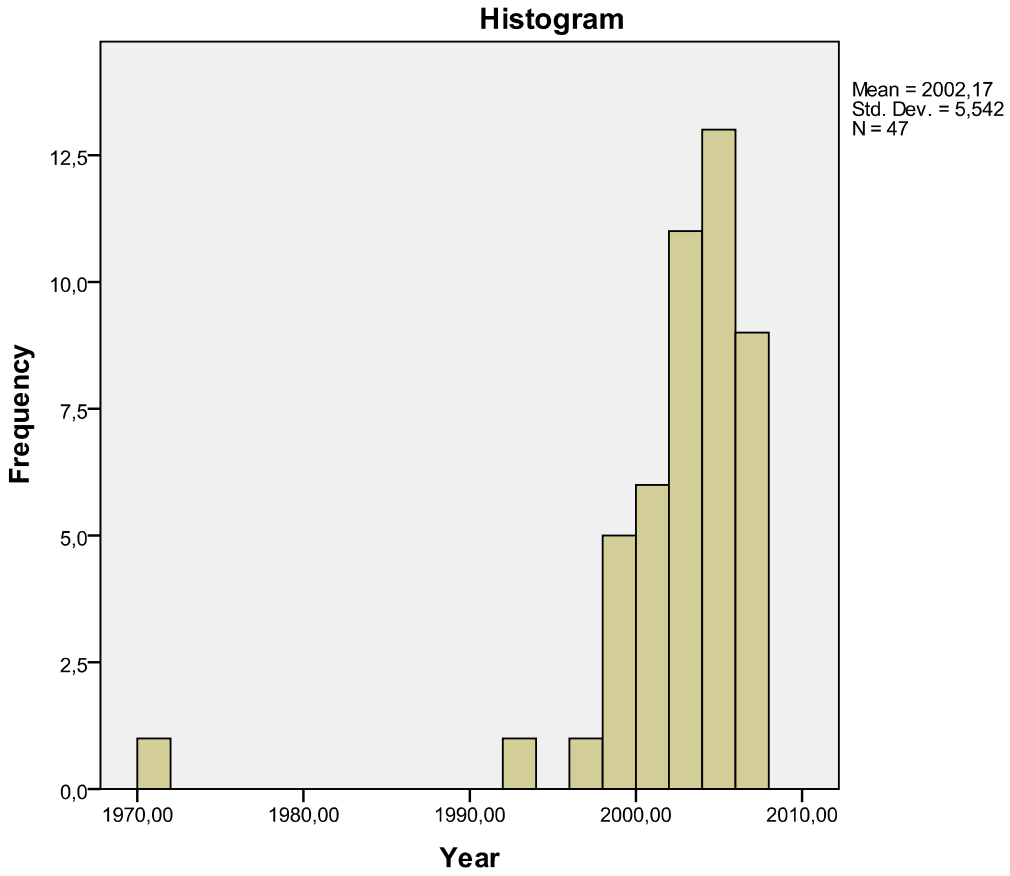
95 Looking at the number of links, it is interesting to note that even if the enterprise model creates bigger communities than the foundation model, the foundation models are better linked. Enterprise models also have than corporation models.

96 The data was extracted from the information on the platform, the year of registration of the domain or the first year the site was present at Internet Archive.org.

Online communities have existed since the 1970s. The sample considered one community founded in 1971, but most were founded between 1993 and 2008. In 2004, there is a peak in maximum number of OCCs founded (see Figure VI).

Concerning founding years and infrastructure governance models, the foundation models were the first to appear. On average, foundation model OCCs were created in 1999. However, among the foundation models there is high variation in the year of foundation. The enterprise and university models follow with a mean founding year of 2002. The corporation model appeared later on, with a mean of 2004. The youngest are the assembly models, with a mean of 2005.

Figure VI. Distribution year of foundation



Several interesting insights emerge in terms of the growth of OCCs over time from 2008 to 2010. The OCCs created before 2000 tend to retain their positions in the rankings of community popularity over time, or decrease only slightly. Even the foundation model OCCs created at this time are still among the most popular OCCs since the 1990s (such as those linked to FLOSS). There is also a feature particular to the OCCs founded in 2001, which is the year that Wikipedia was founded. All of the OCCs founded in 2001 (*N* = 5) have decreased in their positions in the ranking of the most visited platforms, although they have all increased in size since 2001. From 2001 onwards, patterns are more irregular. Some OCCs founded after 2001 decreased in size, while others increased. Those created during the explosion of the Web 2.0 corporation model in

2003-2004 are the largest ones. This seems to suggest that there was a “golden period” for big communities in 2003-4, but that it did not continue over time.

In conclusion, it could be said that OCCs are like wines. The participation growth of an OCC is only partly related to its age. It is also related to the particular year in which it was founded. The years 2001 and 2003-2004 were good founding vintages, which produced the biggest OCCs.

Concerning the effect of time on size (see Table VII), the younger communities are significantly smaller. However, this tendency appears to be changing over time.[97] This could be related to the fact that the assembly model is according to its mean score the youngest model, and also the model which generates the smallest communities.

Table VII. Correlation between size and time (Non-parametric correlation, Tau_b of Kendall)

INDEXES		*Size growth*	*Size 2008*	*Size 2010*	*Links growth*	*Links 2008*	*Links 2010*
Year of foundation	Coeffecient	-,177	**-,325****	-,143	-,135	**-,367****	**-,292****
	Sig. (bilateral)	,156	,006	,198	,270	,003	,008
	Total (N)	34	38	42	35	35	43

Legend: *. Correlation is significant at the 0.05 level (2-tailed).**. Correlation is significant at the 0.01 level (2-tailed). Without I or ** is not significant correlation.

Additionally, while assembly OCCs are the youngest, the foundation OCCs are the oldest. With reference to the more formal foundation model being the oldest, it is worth mentioning that for some of the foundation cases time brought formalization; that is, they were not initially formal, but have since their foundation adjusted and created formal foundations. For example, this is the case of the FLOSS communities and Wikipedia.

That the OCCs based on the assembly model are the youngest could be related to the late adoption of online participative platforms by the social forum. Important cases of innovation in online participative platforms have occurred within the framework of the GJM, such as Indymedia in 2001 which saw the invention of user-generated content. However, apart from these specific cases, the SMOs within the GJM have been characterized by a strong use of e-lists, but a low use of participative online web-based channels (della Porta & Mosca, 2005; Kavada, 2007b). Furthermore, social forums only began to adopt open platforms in 2005.[98]

Finally, a clear trend is the decrease in position or indeed the discontinuation of OCCs based on the assembly model, particularly the OCCs linked to the GJM. This is the case of protest.net, founded in 1998, which saw a drastic decrease in size, and the more moderate decrease seen in Indymedia, founded in 1999, while several OCCs linked to the social forum process founded in 2006-2007 disappeared. This is particularly the case where the OCCs provided

97 In the data on the size of OCCs in 2008, there was correlation between the young and the small. However, in the data on 2010, the tendency for the youngest in 2008 to also be the smallest decreased.

98 The first wiki was used in 2003. However it was not provided by the group in charge of organizing the forum. Systematic and “official” support for open platforms at the social forums did not come about until 2005.

within the framework of the GJM are event oriented. For example, several of the OCCs linked to the WSF were no longer provided in 2010 (i.e., openelibrary.info, wsf2008map and wsfprocess). But these decreases in size could also be linked to their informal provision, which does not create the conditions for their continuity. Another reason for the "death" of OCCs is linked to their being based on technology that has over time become obsolete. This is the case for openplans, for example.

Furthermore, it seems that OCCs face some difficulties in coping with "big changes" over time. On the one hand, the OCC culture emerged in platform design and their continuity is linked to this. It often seems easier to start a process with a new platform than to try and make a platform design change. In addition to this argument, most of the "old" cases in the sample did not update their technologies to the new applications and options that became available. For example, the cases created before 2000 (i.e., protest.net, archive.org, Project Gutenberg, Slashdot, The Assayer, Open Directory project) have not incorporated major innovations in their platforms since then, even after the popularization of other channels of openness to participation worldwide with the Web 2.0 phenomenon. In other words, these cases were very innovative at the time of their creation; however, they did not incorporate major innovations over time. One exception is the FLOSS group of cases; these are OCCs dedicated to creating new software, which they use to keep updated and incorporate innovations over time. Importantly for this research, the ability to renew the platform over time is connected to the type of governance and size. While closed providers seem able to incorporate technological innovations, open providers, and particularly the informal assembly model (where decisions require the agreement of a larger body), have more difficulties with innovation. Indymedia, a case following the *assembly model* of governance, has remained the same since its creation in 1999; while in contrast Wikipedia has incorporated some changes. However, Wikihow, an *enterprise model,* has changed more than Wikipedia. Although both Wikipedia and Wikihow are based on the same technology (Media Wiki), Wikipedia did not make any substantial changes to its interface over time, while Wikihow successfully launched a completely new interface. Nevertheless, this could also be connected to size. Innovation in bigger communities seems to be more difficult than in smaller ones. Coming back to the case of Wikipedia, while much experimentation did take place during its first year according to its founder, once the site became very popular and big the incorporation of changes became more difficult.

V. III. II Collaboration: how does infrastructure governance affect collaboration?

What does collaboration between individuals mean? What does it mean when we say that OCCs are collaborative? Within the bounds of this research, collaboration is regarded not in terms of individual decisions on whether to collaborate or not, but in terms of the structural conditions of collaboration. Collaboration is regarded in terms of the architecture of participation. The central

questions are: *does the architecture of participation encourage collective collaboration or not and if so at what level of complexity?*

Collaboration is defined as a recursive process in which two or more people work together and interact to achieve common goals, where interaction is defined as the dynamic of the changing sequence of social actions between the individuals who modify their actions and reactions in consequence of the actions taken by their interaction partner(s). In a collaborative architecture of participation, contributing requires engagement in a joint negotiation of understanding, and it leads to the creation of a single and coherent integrated and interrelated body which combines all the contributions. A key aspect which distinguishes online collaborative architectures from other forms of collaboration is that the online process is mediated by the work being created and the overall environment, as opposed to mediation by direct social interaction as in other forms of collaboration.

In the analysis of how infrastructure governance shapes collaboration in OCCs, the level of collaboration, named *collaborativeness,* and the type of collaboration was considered. In what follows, how *collaborativeness* and type of collaboration were defined is described, follwed by an explanation of how infrastructure governance shapes them.

For the **operationalization of *collaborativeness***, three aspects were considered: the presence of things achieved in collaboration and at what level; the complexity of putting together all the activity; and the intention of building something together.

Firstly, to indicate collaboration I considered whether the participation involved doing something together, and at what level this took place. I distinguished doing something together only at the level of organizing and putting together the material (metadata), or at the more complex level of creating the basic units of significance together.[99] For example, in the case of Flickr, a picture is the basic unit of significance, but this basic unit is not collaboratively built at the platform; in the case of Wikipedia, the basic unit of significance is an article, which is collaboratively built at the platform.

The level of complexity required to integrate the modules or basic units is the second indication of *collaborativeness*. Different levels were distinguished.[100]

Thirdly, the presence or otherwise of the intention to build something in common was examined (latent common goal) as well as if this was present in the goals of the OCCs. This was analyzed by looking at the statement defining the OCC's mission. For example, these two

99 The indicator for collaborative meta–data has some difficulties and limitations. The use of different technologies in the OCCs of the sample made it difficult to find a common indicator allowing comparisons. Furthermore, the meta-organization of the work involves many different aspects other than participants tagging or not. In this regard the results and meaning of this indicator should be regarded with caution.

100 A first basic level of complexity involves undertaking a set of individual actions carried out in the same place. Only one case was based on this social (personal) networking. A second level of complexity is joining pieces (such as archives of multi-media pieces, directories or libraries) which represents almost half of the sample (49% of cases). A third level of complexity is the integration of the basic units through working in groups systematizing several works (such as techno-political tools for activism networking, research groups or information nodes that host several types of data) which represented 24,5% of the cases. Finally, the highest level of complexity is writing something together (such as writing software, dictionaries entrances or encyclopedia articles) which also represents 24,5% of the sample.

statements mention a collective goal: *"OpenStreetMap creates and provides free geographic data such as street maps to anyone who wants them done by people like you"* or *"The Open Directory Project is the largest, most comprehensive human-edited directory of the Web. It is constructed and maintained by a vast, global community of volunteer editors"*. The following two examples of mission statements do not mention collective goals: "*Broadcast yourself"* (YouTube mission) or *"Share pictures. Know the world"* (Flickr mission).[101]

Concerning the type of collaboration, three types can be distinguished: a first type based on free content or facilitating access to content rather than the collaborative development of content; a second type based on a sum of individual contributions, or album type of collaboration; and the third type, based on merging participants' contributions or a collage type of collaboration.

Two main motivations are present in OCCs: **freedom *versus* collaboration**. On the one hand, OCCs are driven by the purpose of providing free access to knowledge, by sharing resources. This is an element which is present in the entire population analyzed. The second aspect is their collaborative character. However, there are two main approaches to collaboration. One is based on inclusion in collaboration by expertise and the other on openness to participation in collaboration to any person available. This provides two first classifications of OCCs.The first, labeled ***free-oriented* OCCs**, are driven by providing access to information and knowledge already built. The goal is not to raise and articulate participation at the platform, but to to facilitate free access to knowledge. This is the case of OCCs dedicated to open access to academic research materials or specialist results. Only researchers or experts are asked to intervene in the creation of the work; on some occasions there is collaboration among academics or experts, but the possibility to establish collaboration is not provided by the platform. In other words, they are collaborative, but not openly collaborative. The main goal of the platform is the open access to knowledge. The channels of participation in these platforms are very limited (for instant providing the possibility to give feedback) or not present at all. In the sample, these cases are a minority (such as Plos – Public Library of Science, DOAJ – Directory of Open Access Journals or Intute: Education and Research).

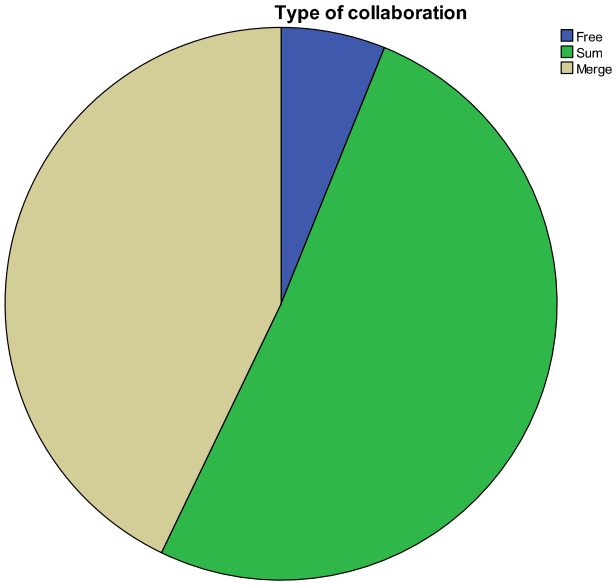
The second type, ***free and openly collaboration-oriented*** is guided both by the purpose of providing free access to knowledge and by hosting the openly collaborative development of the work. A large majority of the sample is characterized by this approach.

101 In order to operationalize collaborative architecture, I looked at the type of relationships used to build the content and the intentions of the OCCs. However, the content has some limitations as an indicator. On the one hand, independently of the willingness to engage in collaboration or not, the type of content or work may shape the possibilities for collaborative architecture. For example, while pictures are generally taken by one person (an individual base), writing texts or software code is more open to collaboration by various people. Another limitation associated to these indicators is that they are based on how the system is designed or the intentions of the community. Yet this does not guarantee that interaction actually takes place; to ensure that collaboration takes place an analysis of what actually happens is required, looking at participation distribution data and not only at the architecture design or the OCCs intentions.

The first contribution from the analysis of collaboration is to differentiate between **two *main levels or types of collaboration: Sum versus merge or album versus collage.***[102]

In the first type of collaboration, participants share the platform as a common meeting place but contribute their work independently of one another. In some cases, participants engage in the collaborative development of the meta-organization of the resulting "album" of contributions (for example through the use of tags), but not necessarily. In some cases participants also engage in commenting on the contributions of others. The individuals do not necessarily have to engage with other participants nor in the integration of the work in order to participate, but they can if they wish to. Even if the contribution does not necessarily involve "doing something with someone else", the sharing of a common place and the ability to insert an individual creation is understood as a collaborative action. The resulting "digital commons" of this logic is an **album** created from a "synergetic sum of contributions". The contributions are added together and the contribution of each individual remains identifiable. The synergy of the meta-data organizes the overall set of contributions. For example, del.icio.us is a social bookmaking repository. It is based on individuals who create bookmarks at the site. The integration of the individual's contribution is a synergetic sum of that contribution and all those made previously. In del.icio.us' words: *"Your bookmarks will organize themselves. Tag your bookmarks. Collections will naturally emerge".* In this case, collaborating in the integration of the contributions, if it occurs only at the meta-data and the basic significant unit level, is developed individually. These sum or album types represent 50% of the sample (see Figure VII).

Figure VII. Distribution types of collaboration



102 It is worth mentioning that the organization of the information in OCCs follows a *principle of modularity*. The overall goal is to divide work into small basic units such as pages or files. The *principle of modularity* applies to both types of collaboration.

In the second type of collaboration, the individuals have to engage in a collaborative action in order to contribute. Integration and collaboration in the contributions occurs at the basic level or unit of significance. In addition, the integration of the basic units can be carried out at several degrees of sophistication. In this second type of collaborative basic unit, the meta-data is generally also developed collaboratively. The **collage or merge type** is based on a cumulative superposition and merging of the contributions ("doing things together"). This type is characterized by collective interaction in the development of the significant units. The contributions of each individual have no meaning on their own. Individuals function and coordinate with other individuals. For example, the case of "Information Visualization" aims to build a collaborative manual on techniques of information visualization. All the sections are written by the members, with distinction of who writes what, and contributions are then amalgamated in common pages. This type of collaboration represents 42 % of the sample.[103]

The collage type of collaboration implies more *collaborativeness* (and more complex integration) than the album type, and participation in the album type is on more based on individual acts than the collage type. However, interestingly, a declared collective goal is present in both types of collaboration.

With regard to ***collaboration and infrastructure governance***, that is, how the different models perform in terms of *collaborativeness* and type of collaboration, several important results emerged from the analysis.

In terms of the level of ***collaborativeness***, not all the models are able to raise the same levels of *collaborativeness* (see table VIII).

In order to extract the ranking of each model based oncollaboration, first an index of collaborativeness was built. The index of collaborativeness is the ponderation and sum of the three indicators of collaborativeness.[104] Then, in order to extract the ranking of each model based on collaboration, the mean of collaborativeness indexes of the cases of each model was calculated (with the analysis of multiple means comparison One-Way ANOVA, Tamhane's T2). Once the mean per each model was calculated, the ranking was built comparing the means of the models. The model with a higher mean of collaborativeness is the firts in the size ranking.

103 This type of authorship and ownership is representative of collaboration. Individual authorship and licenses with an individual basis (including copyright) tend to be used for album collaborations, while collective authorship and collective licenses tend to be used in collage collaborations.

104 The index of *level of collaborativeness* is the level of achieving things together (if the basic unit is based on collaboration or not (vary from 0 to 1; ponderated per 2), plus, if the tag system is collaboratively or not (vary from 0 to 1), plus, the complexity of putting together all the activity (vary from 0 to 3); and, the intention of building something together (vary from 0 to 1). See annex I for further specification.

Table VIII. Infrastructure governance models and collaborativeness ranking (compare means, One-Way ANOVA, Tamhane's T2)

RANKING (MEAN)	*Ranking 2010*	*Std. Deviation*
Foundation	1 (4,2308)	1,78670
Enterprise	2 (4,2000)	1,78885
Assembly	3 (3,8889)	1,36423
University	4 (3,2222)	2,10819
Corporation	5 (2,0000)	,70711

Legend: The scale ranges from best performance (1) to worst (5)
Mean scores in brackets

The foundation and enterprise models are more able to induce collaboration than the other models. The assembly and university network models follow in the ranking of the most collaborative models. Finally, the corporation model displays the lowest level of *collaborativeness.* In addition, the foundation and assembly models are significantly more collaborative than corporation models.[105]

It is worth looking specifically at one of the indicators of *collaborativeness*: the presence of a common goal. The corporation model is based on the absence of a common goal. From these results, it could be said that the models based on for-profit strategies and blackbox conditions are the least based on common goals.

Concerning common goals and infrastructure governance, a latent common goal is present in most of the OCCs' missions (81,3% of the cases). However, no latent common goal is present in the corporation model of governance infrastructure. The corporation model is significantly less based on a common goal than the university network model. In corporation cases the goals are described as individual actions - for example, the aforementioned cases of YouTube and Flickr. Both the foundation and the assembly models are based on the presence of a common goal, followed in this ranking by the university and enterprise models. From these results it could be also said that for-profit strategies do not sit well with collective common goals.

The **types of collaboration** and governance models are not independent of one another. There are some models which fit better with some types of collaboration, while others fit better with the remaining types of collaboration. University network and corporation models tend to be based on the album type of collaboration. In addition, the corporation model is significantly more likely to be coupled with an album type of collaboration than the university, assembly and foundation models. Enterprise, assembly and foundation models, in that order, tend to be coupled with collage types of collaboration (see following Table).

From another perspective, these results could lead to the conclusion that models based on netenabler conditions (assembly, enterprise, foundation and university) favor higher levels of collaboration (favoring engagements with more complex collaboration) than the collage type of collaboration. In other words, a knowledge policy which favors access and reuse (copyleft and

105 The mean difference is significant at the 0.05 level.

FLOSS) increases collaboration and expands the possibilities to develop certain goals in a collaborative way. Black box conditions on the other hand (like those found in the corporate model), which limit access and reuse, generate less collaboration, less complex collaboration and an album type of collaboration. The same type of impact seems to occur to a lesser degree with regard to open provision and not-for-profit strategies. That is, open provision and non-profit strateges favor more *collaborativeness*.

In conclusion, conditions of community control over platform provision and autonomy and freedom to collaborate in the infrastructure favors complex collaboration and commons-based collective action. Conditions of control over platform provision and freedom and autonomy from the infrastructure providers are not required for collaboration based on the sum of individual actions in a shared space.

V. III. III Community self-governance: how does infrastructure governance affect community self-governance?

Community governance refers to decision-making and the policies which govern interaction in the knowledge-making process between participants in a platform. On some occasions, the community of participants is in charge of governing its own interaction. On others, it is the provider that decides the policy which governs interaction. In the analysis, the normative approach to community governance rather than the actual situation was considered. The first indicator referred to who is considered in charge of deciding the policies, while the second looked at who is in charge of deciding the how tasks are distributed or assigning roles.

Task distribution or role assignment refers, for example, to who decides or develops specific tasks that need to be carried out, or decides who becomes an administrator. Administrators are participants that have extra permissions to carry out some restricted actions such as blocking other participants.

Concerning the policies, in general in OCCs principles of “intuitive” rules designing the platform guide and regulating behavior are found. In addition, the commons logic of OCCs suggests that as few policies on such matters are applied as possible, in order to facilitate participation. However, most OCCs have a set of policies and principles based around knowledge-making. Some refer to editorial standards, while others refer to “netiquette” (how to be polite or defining the cultural attitude of the community) or policies of inclusion and exclusion or forms of decision-making. This is particularly the case for formal communities; informal communities tend to have fewer “written” rules.[106]

106 These indicators have some limitations. They consider only the normative discourse. However, what actually happens could be different. Furthermore, it a normative discourse about how the community should act may be present, but this does not mean that a community dynamic was generated at the platform. For example, in the case of WSF, the normative line was that the community of participants decided the policies and rules, when actually there was no distinction between providers and the community, and so the

As presented in the following table IX, with regard to how infrastructure governance shapes community self-governance, assembly and enterprise models, in that order, host the most self-governing communities. Following this the foundation model is the third in the ranking of self-governed communities.

An index of community seft-governance was built based on the sum of the two indicators of community self-governance (both with the values 0 or 1): one indicator, who decides the community rules on content, if it is the provider or the community, and second indicator, who assigns the different community roles, if it is the provider or the community. In order to extract a ranking of community self-governance of the models, the mean of the value of the indexes of community self-governance of the cases of each model was calculated (with the analysis of multiple means comparison One-Way ANOVA, Tamhane's T2). Once the mean per each model was calculated, the ranking was built comparing the means of the models. The model with a higher mean of community self-governance is the first in the size ranking.

Table IX. Ranking of infrastructure governance models effects on community self-governance (mean comparison, One-Way ANOVA, Tamhane's T2)

RANKING MEAN	*Ranking*	*Std. Deviation*
Assembly	1 (1,6667)	,70711
Enterprise	2 (1,3000)	,83666
Foundation	3 (1,0769)	1,03775
University	4 (,8889)	1,05409
Corporation	5 (,0000)	,00000

Legend: The scale ranges from best performance (1) to worst (5)
Mean values in brackets

The university network model has a more intermediate and variable performance in terms of community self-governance. Universities are less self-governed than the enterprise, assembly and foundation models, but more so than corporation models.

Finally, the corporation model, hosts non self-governed communities, both in terms of communities deciding policies and in terms of roles.[107]

These results imply, first, that open provision favors self-governance. Actually, openness in infrastructure governance is positively correlated with community self-governing (see table X). In addition, the informal assembly model promotes more self-governance (particularly in terms of community roles) than the formal foundation model. Second, these results imply that netenabler conditions favor self-governance. Actually, netenabler conditions are positively correlated with community self-governance (see table X). Finally, a for-profit strategy is not necessarily opposed to self-governance of communities, as is the corporation model. The enterprise model promotes more self-governed communities, a result which contradicts the general assumption that for-profit

infrastructure governance was also based on community self-governance. However, the WSF process platform did not generate enough participation to allow the growth of a community dynamic of interaction.

107 Corporation model OCCs are significantly less self-governed than assembly and foundation models.

providers are synonymous with non self-governing communities. This is the case, for example, of Wikihow, which although being a for-profit start-up is also based on the self-governance of the communities.

Table X. Correlation between infrastructure governance axis and community self-governance (Non-parametric correlation, Tau_b of Kendall)[108]

INDEXES	*Openness*	*Informality*	*Non-profit*	*Netenabler*
Community self-governance	**,356****	**,386***	**,280***	**,502****
Who decides the community rules?	**,356****	**,315***	**,317***	**,456****
Who distributes roles?	**,337****	**,462****	,203	**,539****

Legend: *. Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed); Without ** or *, there is not significant correlation.

V. III. III. IV Size, collaboration and community self-governance

It is also interesting to pay some attention to how size, collaboration and self-governance relate to one another. According to the correlation between size, collaboration and self-governance (see following Table XI), larger communities are positively correlated with simpler types of collaboration, and negatively correlated with self-governance. Smaller communities are based on more complex collaboration and are more likely to be self-governed.[109] In other words, the more complex the collaboration, the more important the self-governance of the community. This implies that in order to facilitate collective action for the achievement of more complex goals, self-governance of the participants should increase.

108 The index of openness is the value of the indicator of possibility for participants in the networking platform to be part of the provider body (value from 0 to 3). The index of informality versus formality is the indicator of presence of a board or not (value from 0 to 1). The index of profitability is the indicator if the legal entity was for profit or not for profit (value from 0 to 1). The index of netenabler versus black box is the sum of the value of indicator of use of copyleft versus copyright license (value from 0 to 1), plus the indicator of type of software proprietary versus FLOSS (value from 0 to 1).

109 Concerning the type of collaboration, the album type generates significantly larger communities, but they are less self-governed. The collage type of cooperation generates smaller communities, but they are more self-governed.

Table XI. Matrix size, collaboration and community self-governance (Non-parametric correlation, Tau_b of Kendall)

INDEXES		*Size 2010*	*Cooperation*	*Basic unit*	*Meta data*	*Community-governance*
Size 2010	Coefficient	--	-,077	-,041	**,368****	**-,258***
	Sig. (bilateral)	--	,507	,749	,004	,037
	Total (N)	--	42	43	43	43
Cooperation	Coefficient	-,077	--	**,784****	**,473****	**,513****
	Sig. (bilateral)	,507	--	,000	,000	,000
	Total (N)	42	--	48	48	48
Individual basic unit	Coefficient	-,041	**,784****	--	**,401****	**,537****
	Sig. (bilateral)	,749	,000	--	,005	,000
	Total (N)	43	48	--	49	49
Meta data	Coefficient	**,368****	**,473****	**,401****	--	,058
	Sig. (bilateral)	,004	,000	,005	--	,679
	Total (N)	43	48	49	--	49
Community self-governance	Coefficient	**-,258***	**,513****	**,537****	,058	--
	Sig. (bilateral)	,037	,000	,000	,679	--
	Total (N)	43	48	49	49	--

Legend: *. Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed); Without ** or *, there is not significant correlation.

V. IV. Conclusions

According to the large *N* analysis, several models can be differentiated concerning infrastructure governance. Infrastructure governance is defined according to two main axes: open *versus* closed to community involvement, and autonomy versus dependency on the infrastructure provider (netenabler *versus* blackbox). Other sub-categories which also contribute to defining the infrastructure model are for-profit *versus* non-profit, and formal *versus* informal. According to these axes, five models were found in the sample: university network, corporation, enterprise, foundation and assembly models. Concerning open versus closed access, assembly and foundation models are open, while corporation, enterprise and university models are closed in terms of community involvement concerning the composition of the provider. Although some are open and others are closed, all providers share the characteristic of being very small in size in terms of people involved in relation to the size of the community. With regard to the autonomy versus dependency axis, the corporation model is the only blackbox model, the rest being netenabler models to different degrees. In order from the most netenabler to the least; assembly, enterprise, foundation and university models.

In addition, the large *N* analysis provides important insights for testing the general hypothesis of the study.

Concerning the **first general hypothesis,** *infrastructure governance shapes the community generated. In particular, infrastructure governance shapes the community in terms of size, complexity of collaboration and community governance*, according to the analysis, infrastructure governance shapes the community. This confirms the first general hypothesis.

Firstly, not all the models are able to generate the same size of communities. Secondly, not all the models are able to increase collaboration levels. Thirdly, some models are more suited to more complex collaboration than others. Fourthly, and finally, some models are based on self-governance while others are not.

Concerning the two axes on the ordering of infrastructure governance, dependency on the infrastructure (blackbox) favors an increase in size of communities, but lacks collaboration. Autonomy and freedom from the infrastructure (netenabler conditions) favors more complex collaboration, but lacks the size (or success) of the community.

Concerning the axis of open versus closed to community involvement, the effect is more complex. Openness to involvement in provision favors collaboration where there is some formal organization of participation. Being closed to participation in provision favors an increase in size, but only where provision is based on a for-profit strategy. Finally, major collaboration tends to require more self-governed communities.

Although some conditions favor size while others favor collaboration, I wish to avoid concluding that size and collaboration are negatively correlated. There is no actual correlation between the two.

Table XII. Models ranked in terms of size, collaboration and community governance

Model	**Size**	**Collaborativeness**	**Type of collaboration**	**Self–governance**
Corporation	1	5	Album	5
Enterprise	2	2	Collage	2
Foundation	3	1	Collage	3
University	4	4	Album	4
Assembly	5	3	Collage	1

Legend: The scale ranges from best performance (1) to worst (5)

In terms of how each of the five models shapes the community, infrastructure governance models that are closed to community involvement in platform provision, that are not autonomous (blackbox) and that are based on for-profit strategies, in other words the corporation model, generate larger communities. However, the corporation model also generates less collaboration among participants and excludes self-governed communities. In other words, blackbox conditions allow for an increase in individual participation, but do not favor collaboration between participants.

This is coherent with the finding that the corporation model tends to be based on an album type of collaboration.

From the analysis it also emerged that the models based on for-profit strategies and blackbox conditions do not frame their activities in terms of common goals.

The assembly, enterprise, foundation and university models, which are based on netenabler conditions, generate smaller communities, but provide the conditions for higher *collaborativeness* and more complex goals. This is consistent with the idea that the assembly, foundation and enterprise models tend to be based on collage types of collaboration.

The openness of the assembly and foundation models has a similar effect to their netenabler conditions. It favors smaller communities, but these are more collaborative and self-organized. However, the informality of the assembly model resulted in a worse performance than the foundation model in terms of both size and collaboration. In other words, more formal strategies for providing platforms favor better OCC performances.

Finally, the enterprise model has all the qualities needed for OCCs to increase participation levels and *collaborativeness* combined. Closed and for-profit, the enterprise model favors big communities; being a netenabler, the enterprise model also favors more collaboration. This type of model seems to successfully contrast a lack of openness in terms of community involvement in provision (representational power) with extensive autonomy and freedom for participants. Furthermore, these OCCs are based on self-governed communities, despite being for-profit.

The university model is also based on closed and netenabler conditions, however, the university model OCCs are so to a lower degree than those of the enterprise model. In addition the university model is not for-profit, which results is rather small, and not particularly collaborative, communities.

In conclusion, none of the models combine a large community size, *collaborativeness* and self-governance. The corporation model generates the biggest communities, based on lower levels of collaboration and a lack of self-governance; the foundation and enterprise models are able to raise mid-sized communities, and are more collaborative and self-governed communities. Finally, the assembly model is the weakest in terms of generating successful OCCs.

Concerning the **second general hypothesis**, *OCCs are able to increase participation levels and address a complex agenda while maintaining democratic principles. Larger and more complex OCCs are the most democratic in terms of infrastructure governance and community platforms,* the large *N* analysis only partially confirm this hypothesis.

The large *N* analysis of OCCs provides evidence on the presence of several democratic styles in OCCs. No OCC fulfills all the dimensions of democratic quality, each prioritizes some. Importantly, from the large *N* analysis it emerged that the ways in which OCCs manage spaces is significantly influenced by how they perform on the other dimensions and sub-dimensions. The provision strategy of the infrastructure emerges as significant in defining the characteristics of the community created in terms of democratic style.

With regard to infrastructure governance and democratic style, the enterprise model scores best in terms of inclusive functioning (that is, with regard to information usability and technical accessibility), while the assembly model is not inclusive in its functioning and is the second least transparent, closely followed by the corporation model as the worst model in terms of transparency. The foundation model is the most transparent and is more open to participation in the platform, while, the university model is the least open to participation in the platform.

The analysis of the correlation between size and dimensions of democratic quality partly confirmed and partly disproved the second general hypothesis. Bigger OCCs perform well on dimensions of democratic quality, on information usability and accessibility, and technical accessibility. However, bigger OCCs perform well on transparency only in terms of knowledge policy transparency. Finally, bigger OCCs perform badly on dimensions of the contents of knowledge policy and are closed to participation in platform provision. Interestingly, bigger OCCs are more multilingual. Wikipedia and FLOSS are particular cases, because they are amongst the biggest (although not the biggest) OCCs, and perform well on most of the dimensions and sub-dimensions of democratic quality.

Addressing the question from the perspective of infrastructure governance, the larger OCCs are on the corporation model, which implies that they are based on community involvement in infrastructure provision and major dependency (rather than freedom and autonomy) on the infrastructure provider. Larger OCCs are not self-governed, and depend on the infrastructure provider to govern interaction in the platform. However, considering other aspects of democratic quality, the corporation model is significantly more inclusive than the other models in terms of technical and informational usability and accessibility. Plus, they tend to be more transparent in terms of knowledge policy. In contrast, smaller OCCs are based on the involvement of the community in infrastructure provision, freedom and autonomy of the community from the provider, and the self-governance of community interaction. In conclusion, some aspects associated with democratic organizing with are favored by larger communities (inclusivity and a specific form of transparency); yet those linked to infrastructure governance are not favored by larger communities. In other words, there is no clear tendency for larger communities to be more democratic. However, the results of this research tend to confirm the previous literature stating that an increase in participation is in tension with more democratic organization (Michels, 1962). Yet OCCs are a particular case in terms of how they are able to retain democratic principles when facing complexity.

The literature on democracy and complexity traditionally concludes that democratic organizing does not sit well with complex agendas and processes. Michels' "iron law of oligarchy" (1962) states that as an organization grows in size and complexity, it will become less democratic (and more bureaucratic). This research on OCCs contradicts this intuitive relationship between democracy and complexity concerning infrastructure governance. A more complex common agenda of collaboration is achieved with a model of infrastructure governance more open to

participation, models based on freedom and autonomy of the community, and those based on the self-governance of the community; whereas a less complex goal of collective action and collaboration tends to be present under the opposite conditions. In other words, the more complex the collaboration, the more self-governance, community control and freedom are required. Other recent empirical research has provided evidence regarding the conditions under which complexity does not result in a decrease of democratic quality, but is rather accompanied by more participative forms (Doerr, 2009; Polletta, 2002). This research corroborates these previous insights in the case of OCCs.

In sum, in terms of size of participation, the research results tend to disconfirm the hypothesis that participation size and participative democracy are not in tension. However, in terms of complexity, more community governance is present as goals become more complex. That is, in order for collaborations to involve more complex activities, greater community empowerment is needed.

Concerning the **third general hypothesis**, the formalization of OCCs does not generate larger and more collaborative communities. In other words, this research does not confirm Olson's work on the importance of formal organization as a means of overcoming collective action dilemmas. In the light of this statistical part of the analysis, it could be argued that formal organizing is a source of success in terms of infrastructure governance. Among the open providers, the more formal organization of the foundation model generates larger communities than the informal assembly model. In addition, the informal assembly model is that least able to sustain activity over time; it is the model with highest number of cases to stop activity between 2008 to 2010. However, the informal organization of the assembly model does generate more collaboration. In sum, the statistical analysis partially reinforces Olson's and Michels' conclusions. However, considering the results in the light of the in-depth case studies, the picture becomes more complex.

Chapter VI

Participation in online creation communities' platforms

> *"I was too shy to do anything. But I'm like, well, there's no one over here and there's no one doing anything, I guess I should try to fix it. So I fixed things. And so then eventually like one person came by and made some corrections and I said "thank you very much for the corrections, it's so helpful!" and he was like, "why are you doing all this work?" And that was the first person that I got to meet and we actually now talk every day. People made me very welcome at Wikipedia".* (A, Glenn, Interview, November 20, 2008).

This chapter will address the organizational forms of the OCC platforms. Which conception of participation shape the environment and interaction between participants? How does the architecture of participation lead to increases in participation? How is collaboration among the participant articulated? This chapter throws light on the main organizational characteristics of participation in OCCs. While previous literature has mainly concentrated on pointing out the unequal distribution of participation for most OCCs (Hill, Hollan, Wroblewski, & McCandless, 1992; Horowitz, 2006; McConnell & Huba, 2006; Nielsen, 1997), there is a lack of analysis of the main organizational characteristics which could allow us to better understand this unequal distribution of participation and, more specifically, how participation increases and collaboration takes place in OCCs.

The chapter will first list 10 main organizational characteristics of OCC environments. Environment refers to the architecture or structure of the space combined with the social norms and values that regulate it. How the various organizational principles relate to each other will also form part of the analysis. For each characteristic the statistical data which emerges from the quantitative large *N* analysis is triangulated with the qualitatively-oriented comparisons of the four cases studies, which will allow me to better interpret meaning.[110] After the main characteristics of the organization of participation in OCC platforms are presented, the chapter will shed light on how these organizational principles are linked to participation growth and how these environments shape the types of collaboration established. Finally, I will present how the conception of participation in OCCs challenges previous approaches in the analysis of participation in collective action.

110 For the social forum case, I carried out a statistical analysis of participation data for openesf.net, since such data was not already available, while for the Wikipedia, Wikihow and Flickr cases I carried out no such analysis of participation data, because these were already available from previous empirical research or/and was provided by the platform providers.

My analysis departs from the assumption that collective actions following a representational ethos and collective actions following a participative ethos follow their own distinctive logics and dynamics. The meaning and function of participation in a representative organization could be different from participation in an open organization. Furthermore, online environments have some constraints that could affect the way participation takes place.

VI. I. Main organizational principles of participation in OCCs

a) Openness to participation

Openness to participation is the main principle at work in OCCs. Concrete indicators of the openness to participation dimension are the provision of multi-interactivity channels that allow participation in the content hosted at the platform, and the protocols that guide those applications. Protocols refer, for example, to low requirements for credentials to participate.

According to the large *N* analysis, OCCs usually have an average of four different channels of participation (i.e., the possibility to add comments to a specific section of the content, upload materials, and edit Web pages, among others). The protocols that guide participation in OCCs appear to incentivize participation in a high percentage of the cases (i.e., 80% of the registration systems allow automatic registration without requiring any filter to become part of the platform). This contributes to lowering the transaction costs involved in becoming an active contributor. According to Lerner and Tirole (2002) one factor encouraging contributions to OCCs - which is cited by critics as a problem - is the low cost of contributing. Reagle's analysis points out that this open character has a non-discriminatory meaning, and "*prohibits arbitrary discrimination against persons, groups, or characteristics not relevant to the community's scope of activity*" (2004).

By highlighting the importance of the principle of openness to participation in OCCs, I do not seek to imply that all OCCs are equally accessible. OCCs constitute a substantial reduction of the barriers to information and knowledge. However, the level of inclusion of OCCs and the reduction of sources of barriers to participation is not absolute and depends on the issue dealt with. In terms of information usability, the analysis shows that this is an important aspect of the OCCs (all the cases have at least one indicator of usability). However, in other aspects linked to inclusion OCCs perform badly. For example, OCCs turn out to be exclusive in terms of accessibility for people with physical disabilities. In terms of inclusion by reducing the barriers to use and access technology which supports collective action, the OCCs are again irregular. Some OCCs have mechanisms to reduce the barriers linked to the technical base. However, 16% of the cases have none.

Although the OCCs are characterized by the importance of openness to participation, participation is not equal. On the contrary, as will be presented in detail in the next section, the tendency towards inequality in participation seems to be characteristic of most online communities.

Furthermore, the participant observation data showed that equal participation and contributions did not seem to be expected.

While according to the representative ethos equal participation (understood as the equal representation of all voices) constitutes one of the pillars of legitimacy in representative systems, in OCCs equality seems to refer to openness to participation (as a possibility) rather than the resulting participation and contributions. The value of the possibility to share seems to substitute the value of equality as a key pillar.

Finally, it is worth mentioning that openness to participation implies a trade off: it can result in disruptive behavior, such as spam or vandalism.

Concerning the case studies, in all of these the indicators for the importance of openness as defined for the large *N* analysis are present: that is they all employ easy to use technology and channels for open participation, and do not ask for credentials or other requirements in order to intervene. However, in contrast to Wikipedia and Wikihow, where a person can intervene in the content without being registered, on Flickr and openesf.net the user must register in order to intervene. However, registration is automatic, and so does not constitute a very high barrier to open participation. Furthermore, openesf.net and Flickr have different degrees of openness. openesf.net is divided into projects, and each project can decide the level of openness required before intervening in the project, choosing between: open to any person registered at openesf.net or open only to members of each specific group at openesf.net. Flickr is also particular because participation is mainly individually based. Each participant generates his or her own content and then participants interact around the classification of the content and comment on the content and in groups. However, in the groups Flickr follows a similar approach to openesf.net. Each group can decide the level of openness, that is whether to remain public, public by invitation or completely private.

Finally, in the discourse it is emphasized that the community provides accessibility to participation. For example, Wikipedia is presented as "*the encyclopedia that anyone can edit*".[111]

The emphasis on openness to participation in the environment does not necessarily result in actual participation that is it does not necessarily mean that the OCCs see high levels of participation. If an OCC is participated in or not is a difficult and a relative question which depends on each case. The maximum level of participation depends on the goal and target constituency of each case. For example, a collaborative encyclopedia project might attract more people than the creating an online repository for visualization techniques or any other very specialist topic. As will be presented in the following, the openness to participation principle is at the service of the goal or mission of each OCC.

In terms of the resulting participation in the case studies, it may be said that Wikipedia achieved a high level of participation in accordance with its goal. Wikipedia is the sixth most visited

111 Source Wikipedia main entrance

Web site on the Internet.[112] Simply by considering that 10% of the very active participants in Wikipedia number 300.000 people in total, it can be concluded that Wikipedia enjoys high participation in.[113] This is high if we compare it with other forms of organizing for the achievement of a similar goal, such as the Encyclopedia Britannica (Emigh & Herring, 2005).

Furthermore, the Wikipedia community accomplishes its goal. Wikipedia is the largest encyclopedia in history. There does not seem to be a problem with a lack of participation in Wikipedia. On the contrary, in some instances a problem of "too much participation" occurs. This happens when the levels of participation are so high that technically the system is not able to sustain the amount of activity and collapses. This occurred for example after the 11 September 2001 attacks or the Obama election, during which many people wanted to keep Wikipedia updated (T. Finc, Interview, November 20, 2009).

Interestingly, from the participant observation carried out, I noticed some signs to suggest that inequality in terms of contributions does not seem to be interpreted as a problem by Wikipedia participants. GerardM, an active wikipedian, spoke out in a mailing list against the idea of regular equal contributors and for valuing all community forms: "*When you divide people up in groups, when you single out the "most valuable" ones (because they contribute more), you in effect divide the community. (...). When you label groups of people, you divide them and it is exactly the egalitarian aspect (independently of their contribution) that makes the community thrive*" (GerardM e-mail to the mailing list Wiki-research-l, October 21, 2008).

Flickr also raises a large amount of participation. It is the 31st most visited Web site.[114] In 2007 an estimation put the community at 7.7 million participants (Negoescu & Gatica-Perez, 2008) 2008). As of October 2009, Flickr claims to host more than 4 billion images, the largest photography archive in history.[115]

Wikihow is also based on openness to participation. However, Wikihow is less popular than Wikipedia and Flickr and has substantially fewer participants. It is the 656th most visited Web site.[116] In February 2010, Wikihow had 23.6 million readers and hosted 75,000 articles. As of April 2010, the number of registered Wikihow participants was 213,204.[117]

With reference to participation in openesf.net, the picture is less clear. openesf.net is the first online space based on the open participation principle to actually raise any significant participation in the Social forums. However, the levels of participation at openesf.net are low (less

112 Source Alexa Ranking Retrieved April 17, 2010.
113 Source Wikimedia Foundation. Reliable estimates on the Wikipedia community are very difficult to make. There are 8.5 million registered accounts. The Wikimedia Foundation declared "a global community of more than 300,000 volunteers" for all the Wikipedia languages; however, according to several Wikipedia specialists this data seems to be underestimated and does not include the population from other projects of the Wikimedia Foundation - a part of English Wikipedia. Data available at:: http://en.wikipedia.org/wiki/Wikipedia:Wikipedians.
114 Source Alexa Ranking Retrieved April 17, 2010.
115 Source Flickr blog: http://blog.flickr.net/en/2009/10/12/4000000000/ (Retrieved April 17, 2010.
116 Source Alexa.com Ranking (Retrieved April 17, 2010).
117 Source Wikihow statistics page: http://www.wikihow.com/wikiHow:Statistics (Retrieved April 5, 2010).

than 1200 registered at the highest point) in contrast with the number of participants in the ESF (between 20,000 and 60,000 people registered at the ESF, depending on the year).[118]

Furthermore, in terms of interpreting the inequality of participation in openesf.net, there is a discrepancy among ESF participants. In some of the interviews with ESF participants resistance to the adoption of open platforms was expressed, because they could increase sources of inequality in participation, while others either did not mention this reason or did not consider inequality in online participation a problem (P. Bernocchi, Interview, December 13, 2007; Member of the Rosa Luxembourg Foundation, Interview, February 23, 2008; F. Russo, Interview, June 8, 2008; C. Aguiton, Interview, December 13, 2007; M. Berlinguer, Interview, December 13, 2007; M. Casalucci, Interview, February 23, 2008; A. Tria, Interview, February 23, 2008; D. Moraira, Interview, September 16, 2007; M. Ap Ceridwen, Interview, February 23, 2008; P. George, Interview, June 8, 2008).

.

b) Participation is possible in multiple forms and to different degrees

Research on the distribution of participation suggests some common features of the distribution of participation in content generation for online communities. A very low percentage of committed participants usually account for a disproportionately large amount of the content; a low percentage of participants make very small or indirect contributions; and, finally, a large majority of individuals do not participate. This distribution of participation is known as the 90/9/1 principle or 1% power law (Hill, Hollan, Wroblewski, & McCandless, 1992; Horowitz, 2006; McConnell & Huba, 2006; Nielsen, 1997). It refers to the general observation that 90% of visitors are lurkers who read or observe but never contribute,119 9% contribute a little or from time to time, and 1% contribute a lot and account for almost all the content and system activity (Nielsen, 2006).[120]

Even before the Web was invented researchers documented participation inequality in a variety of online media (Hill, Hollan, Wroblewski & McCandless, 1992; Nielsen, 1997; Whittaker, Terveen, Hill & Cherny, 1998). In a study of more than 2 million messages on Usenet, Whittaker, Terveen, Hill & Cherny found that the most active 3% of posters contributed 25% of the messages, while 27% were from people who posted only a single message (1998). The presence of lurkers was also documented by initial online communities such as the Well (Rheingold, 1993; Turner, 2006). Researchers also point out that in FLOSS communities, a small amount of very active participants are responsible for the vast majority of the work (Ghosh & Prakash, 2000; Koch & Schneider, 2002; Mockus, Fielding & Herbsleb, 2002). This behavior in FLOSS communities is not specific to source code production, but can generally be found in other elements in software

118 Source, main page of the European Social Forum Web site http://www.fse-esf.org

119 Lurker is a term that refers to a person who reads discussions and observes an interactive system, but rarely, if ever, posts or participates. However, according to previous research many lurkers feel that they are part of the community (Nonnecke & Preece, 2000).

120 This can be compared with the 80/20 rule known as the Pareto principle, that is that 20% of a group will produce 80% of the activity, or other power laws.

development, such as the documentation of software programs and translation tasks (Robles, Gonzalez-Barahona & Merelo, 2006).

In my view power law distribution suggests that participation is possible in multiple forms and to different degrees. Other authors refer to this as flexible levels of involvement (Stadler & Hirsh, 2002).

Multiple forms refer to task distribution. Not all participants necessarily carry out the same tasks, but choose among several (i.e., adding new content, editing content, classifying content, among others). One person could contribute with non-edited information while another participant takes care of editing it and increasing its quality. Some tasks may require more effort and commitment than others, however, and in most of the cases tasks are highly divided, so that each participant can contribute just a small part of a module, or a large part, facilitating the scaling of participation.

This must not be confused with a lack of structure; on the contrary the system is highly structured. The environment is split into modules, which makes it easy to locate information without knowing what is occurring on the overall platform. Search engines and meta-data systems, which are present in 98% of the cases, allow all the modules to be put together, making them easier to handle.

It may also be worth mentioning another type of participation: "bots", that is a program developed and controlled by specific participants to execute specific and repeatable acts (such as automatic corrections) which are on some occasions responsible for a large amount of activity.

That participation is possible to different degrees refers to different levels of commitment to the platform in terms of time and active task performance. The environment's design allows different availabilities to be accommodated, which results in the three main profiles of participation: very active or strong, weak and non-participant. Several empirical studies have shown how a mixture of strong and weak participation is crucial for organizational success in social movement organizing (Campbell, 2005, p. 64; Mansbridge, 1986; Morris, 2000, p. 450; Uzzi, 1996).

Very active and committed participants are also needed. That is, people who have a large degree of commitment to the process and dedicate a great deal of time and a large volume of work or complex effort to it.

The formation of a "critical mass" of active participants is particularly important for starting an online community. In Howard Rheingold's (a proponent of the virtual community) words: "*An online community either gets started or it doesn't. The first important stage is growth, at the very beginning. If you do not have a critical mass of participation – that could be ten people! (then the online community doesn't get started). But then you're going to have to scale that so that it's not overwhelming for people.*" (H. Rheingold, Interview, November 11, 2009).

Sporadic or low level participants are also present. The modular organization and task distribution makes it easy for this group to make only small or weak contributions.

The possibility of weak participation enables OCCs to engage populations and audiences that are not accessible via requirements for strong participation. That is, people who can contribute only sporadically, but not with high levels of commitment. At FLOSS, the low level of active commitment required among participants is seen as an advantage (Freeman & Rogers, 2002).

The concept of *weak cooperation*, as proposed by Cardon and Aguiton (2007), underlines that online cooperation around a common goal generally creates more weak participation (but a large network) in comparison with offline collective action (Cardon & Aguiton, 2007).

It is worth clarifying that the strength of participation does not refer to a relational or positional attribute. The strength of participation can be defined as a combination of the amount of time and attention, the emotional intensity, amount of interventions/content creation, and, fidelity/persistance (the number of occasions the person visits the same platform). In this regard, weak participation does not refer to the role of the participant in bridging the OCC with other processes. Nevertheless, weak participation may favor greater connectivity of the OCC with other processes, and reaching larger areas of information. A flexible approach to participation can allow participants to distribute their resources among several processes or switch between several OCCs. In this line, Granovetter (1983) suggests the importance of weak ties for collective action.[121] Weak ties favor access to vast and diverse fields of information resources (Granovetter, 1983).

In conclusion, both strong and weak participation are present and accommodated in OCCs. Weak and strong participation constitute important contributions to the community. Furthermore, non-participation or unintended participation is also present and plays a role.

Non-participation could be characterized as free riding behavior. However, free riding, and in general the fact that a large percentage of people do not contribute, does not necessarily constitute a problem for the achievement of the common goals of OCCs. Free riding constitutes an impediment only in function of the good the community aims to build. With exhaustible goods, such as natural resources which can be “used up” and are costly to extract, free riding constitutes a problem. But in a context where new information and communication technologies have substantially decreased the cost of the reproduction of information, information-based goods, like those provided by OCCs, do not necessarily face scarcity problems (Bollier, 2008). When goods are non-exhaustible, non-competitive and exclusion from their use is costly, then free riding is not necessarily a problem. It is even said that OCCs are anti-rival (Weber, 2004). They are not *only* non-rival in the sense that they can tolerate free riding without reducing their stock of value, but are actually anti-rival in the sense that OCCs positively benefit from free riders. That is, ironically, the value of the outcome of the OCCs increases when more people use them (Benkler, 2006; Bollier,

121 Granovetter defined the strength of a tie as "a combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie". This definition refers more to the resources that feed the tie, than its relational or positional character. However, Granovetter mainly used the concept of the weak tie to refer to the position of a tie in bridging or connecting several processes (1983, p. 22).

2008). This implies that for any participant, contributor or "free rider", mere "use" implies a contribution. Nevertheless, this is only so where there is a sufficient number of contributors.

In addition, Bimber, Flanagin & Stohl suggest that the free-riding analysis of costs and benefits as applied to information goods is challenged by some of the emerging characteristics of online communities and environments (2005). In the authors' approach the perceived cost of contributing to collective actions via contemporary electronic tools is a relatively weak or even an unimportant factor in explaining individuals' decisions to contribute to information repositories. In their words: *"When (contribution) is costly, boundary crossing typically takes on the characteristics of a discrete decision. When participation is easy and not costly, it is less of an issue of a decision"* (2005, p. 378). Secondly, some contributions do not necessarily involve a decision. For example, in their *side effects* contributions become "unintended", there is no decision to contribute, the contribution is the result of some other intention (using the content). And thirdly, the motivations that lead to contributing to an online community could be very diverse, chief among them are: as a work task (such as the case of an employee of Coca Cola maintaining the Wikipedia entry on Coca Cola); because it covers a private need (i.e., to share a video with the family); for political reasons of universal access to information and knowledge; but importantly most of the volunteer participants state that they do it for fun, passion and the development of personal creativity (Benkler, 2006; Weber, 2004).

The value of the information resources resulting from OCCs increases through several mechanisms as more people "use" it. Firstly, non-participants contribute due to positive network effects. A network effect is the effect that one participant in an OCC has on the value of that OCC for other people, even if it was not his or her intention. When network effects appear, as more people become involved in an OCC, the more valuable it becomes. For example, as more people use Facebook as a tool to connect with others, the more valuable it becomes since users can potentially connect with a larger number of people through it.

Secondly, in online environments most of the actions are translated into digital information, known as *digital threads*, the elaboration of the digital threads are a source of very valuable information for the improvement of the content and the functioning of the environment. They can provide, for example, relational and attention data. For example, the environment can learn about the connections between content according to how users navigate across them. Or the number of times an article was visited or downloaded could be used as an indicator of quality for that article.

Thirdly, non-participants also play a role as an *audience. Free-rider audiences* increase the relevance and value of the platform's content and increase the motivations for participation.

Finally, it is also worth considering that even though exclusion is present in OCCs, restricting access to non-participants could be costly.

The four cases studies I analyzed are based on a modular and high task distribution architecture. The distinction between strong/weak/non-participants is also present.

Previous analyses of Wikipedia have addressed the question of participation distribution and showed that contributions to Wikipedia also present strong inequalities. Depending on the research, the importance of a “core team” as the main contributor of most of the content is more or less balanced with the contributions of a large number of less frequent participants. Jimmy Wales, the founder of Wikipedia, originally noted in December 2005 that "*half the edits by logged in users belong to just 2.5% of logged in users"* (Wales, 2005). Research by Kittur, Chi, Pendleton, Suh, & Mytkowic, who measure contributions by different classes of editors, shows that elite contributions (10,000 or more edits) are less present in comparison with the "long tail" of small contributions. The authors put it in this way: *“Power of the Few Vs. Wisdom of the Crowd: Wikipedia and the Rise of the Bourgeoisie”* (2007). However, Ortega and Gonzalez-Barahona (2007) and Ortega (2009) conclude in more recent work that less than 10% of the total numbers of authors are responsible for more than 90% of the total number of contributions or, conversely 90% of the active editors are responsible for less than 10% of the total number of contributions. Ortega & Gonzalez-Barahona's results reduced the importance of the "long tail" and instead reinforced the idea that contributions by the most active participants overwhelm contributions by the crowd of sporadic authors. According to these authors, the evolution of this inequality over time remains very stable (with a typical value of between 80% and 85% of content produced by a "core team"). Furthermore, all the top-ten languages of Wikipedia showed a similar pattern, with very variable behavior pattern at the beginnings of each Wikipedia (up to 20 months) which then alters, showing a common and growing trend of inequality that is characteristic of mature Wikipedia environments. Finally, these authors also point out that the “core team” of very active participants is not necessarily formed by the same individuals over time.

In the case of Wikipedia, weak participation not only refers to work on content, but also other types of activities such as contributing by donating money. “Mini fund-raising” is the main source sustaining the 6 million dollar annual budget of the Wikimedia Foundation. Most donations are for less than 30 dollars and 1 dollar donations are also received. In terms of the Wikimedia Foundation Head of Community Giving:

> “*The Obama campaign was built on a lot of social networking, a lot of small groups bringing people together to make small donations. So it’s a similar approach. We’re not looking for the one big huge gift. We’re looking for a lot of small gifts to keep us free and independent and help us do what we want to do. Stay uninfluenced by any one group or person.”* (R. Montoya, Interview, December 17, 2008)

Concerning the Wikihow case, from the analysis of a random day it emerged that the top ten participants were responsible for almost half of the content that day (46,5%).[122] Wikihow interviews reported a similarly unequal distribution of participation as that found in Wikipedia (J. Herrick, Interview, December 4, 2008; B. Megas, Interview, August 28, 2009; N. Willson, Interview,

122 Sources Wikihow statistics page http://www.wikihow.com/Special:Statistics Wikihow daily statistics page for 16 April 2010.

August 28, 2009). In the Wikihow founder's words: *"Wikihow follows power law. (...) You have to support the very minimal contribution or the very small contributions of people who wouldn't actually interact with it – while it's not obvious that they create value for the whole, they really do. So you need to allow the whole thing, so the ecosystem flourishes and can be successful"* (J. Herrick, Interview, December 4, 2008).

Shirky reports that the top ten participants among the 118 total contributors contributed half of the content on an event uploaded at Flickr (2008, p. 123).

Participation at the ESF is organized around both organizations and individuals. However, I analyzed participation in openesf.net in terms of individual participation, since the large majority of the accounts (97,19%) were registered with the name of an individual rather than an organization.

Concerning participation in terms of generating content, the results of my analysis of openesf.net showed that 18 % of the participants generated content and 82 % of the participants did not. Among those participants that did generate content the most frequent contributors generated content for *only* one project (14,2%) while the rest generated content for two to seven projects (3,7%).[123]

The results show that 18% of participants generated content and 82% did not. Within the 18% of content generators, 3,7% were very active participants (generated content in more than one project) and 14,3 % were less active participants. In this regard openesf.net follows an 82/14,3/3,7 rule. Several reasons may underlie these higher percentages as opposed to the 90/9/1 rule at openesf.net. On the one hand, openesf.net is not completely open, it requires registration which already indicates a higher commitment to participation. If we consider participation in terms of only visiting the platform (without registering) the percentage of active participation would be lower, as the number of participants with lower commitment levels would increase in comparison to those with higher commitment. On the other hand, participants in openesf.net also meet in organizational meetings and during the ESF itself. The fact that openesf.net participants have other ways of knowing and meeting each other could affect the way they act on the platform, for example, it may be the case that it increases participation as some participants already know each other.

Furthermore, the results depend on how the content is conceived. The generation of content was strictly defined as activities not directly related to personal information. Content was understood as the creation of spaces for a project, the editing of wiki pages in the projects and the uploading of documents or other audio-visual material. Instead, if we consider participation in terms of "exhibitionism", that is considering whether the participant provides non compulsory information about him/herself on the participant page, then the results change. A total of 44,9% of participants provided at least one extra item of information about her/himself in the registration process. In this regard, if we consider providing personal data as content generation, 44,9% of users would be

123 In addition, it seems that the "persistence" of participation is low. A total of 70,41 % of participants logged in for only one day; while 32,89% of the participants logged in for more than one day.

considered participants. According to Bimber, Flanagin and Stohl one primary effect of NTI is to make boundaries between private and public domains porous and easily crossed (2005). In this regard, the decision to consider the provision of personal data as content or not must be taken carefully, as it would change the results on the distribution of participation in content generation.

In summary, the architecture of participation accommodates very diverse forms and degrees of participation. This is translated into the unequal distribution of content generation in OCCs. However, actual percentages per profile (active participants/participants/non-participants) may not follow the 90/9/1 principle to the letter. Percentages for each profile may depend on what the content is and the protocols for participation in each community. For example, for some communities the percentage of active participants is slightly higher, as was shown in the openesf community case, while in others, such as YouTube, only 0.16% of visitors upload content.[124] From this analysis it also emerges that - depending on how active content contribution is defined - results may vary substantially. In order to develop rigorous comparisons of participation in OCCs, shared indicators for participation in content generation must be established, which is difficult due to the diversity of content addressed by OCCs.

c) Participation is mostly asynchronous and online

As presented in the previous section, participation is decentralized within projects in OCCs, and there are few tasks which involve all participants. Furthermore, it is very rare that all participants are expected to congregate at the same time within the platform. In OCCs of international scope, the time zones of the participants' homes can be different, which makes it difficult to meet at the same time. However, on some occasions chats or other synchronized channels are used.

One moment at which participants congregate at the same time and place is during physical encounters. Members are typically geographically dispersed and the platform is their main means of interaction (Kollock, 1999). In other words, OCCs are mainly developed online. However, participants do sometimes meet physically. Interestingly, some interviewees said that as more online interaction takes place, there is more need to meet physically (N. Willson, Interview, August 28, 2009).

Asynchronous participation in the platform is present in all the case studies. However, participants in OCCs also meet in the same physical place and/or time. In the Wikipedia and openesf.net cases, regular local meetings of participants are organized. Plus, both of these case study OCCs hold an annual meeting. For the case of openesf the annual meeting is much bigger than the online community, while for Wikipedia the opposite is true. Wikimania, the annual meeting

124 Source website "The 90-9-1 principle: How users participate in social communities. Retrieved June 24, 2010 from http://www.90-9-1.com

of Wikipedia, gathers only a small fraction of the community. In the case of the ESF and Wikipedia, there is also organized synchronized communication through chats or instant messaging systems.

Flickr participants also hole some meetings. However, they are less regular. This could be related to the fact that participants in Flickr have less complex interactions and collaborations. Finally, the Wikihow community is smaller, which may explain why they hold few physical meetings.

d) Modularity and decentralized participation

The modular organization of the environment with the splitting of content into separate units (such as articles, software packages, thematic albums of pictures etc.) not only facilitates the presence of several degrees of participation, but also regulates the decentralization of activity. In Lanzara & Morner terms: *"a characteristic feature of development communities is that the process oddly combines a slow global convergence (among all the participants) on the one hand and short and fast local activity cycles"* between a small number of participants on the other (2004: p. 20).[125]

Not all participants are involved in all projects or modules, instead, particularly as the OCC grows, there is a tendency for participation to split or fragment into projects or modules.

Empirical research has been carried out on the relationship between centralization and project size in FLOSS communities. According to Crowston and Howison, centralization scores are negatively correlated with the number of active participants. “In a large project, it is simply not possible for a single individual to be involved in fixing every bug (errors). As projects grow, they have to become more modular, with different people responsible for different modules. In other words, a large project might be an aggregate of smaller projects, resulting in what might be described as a ‘shallot-shaped’ structure, with layers around multiple centres” (2004, p. 15).

With the decentralization of participation into sub-projects, several projects are carried out simultaneously. In this regard, the process of creation in OCCs is not linear, but network-based. In Lanzara and Morner’s words: *"The technology allows agents to entertain parallel conversations in different ongoing clusters. The ubiquity of agents and clusters and the simultaneity of different but parallel conversations are unique phenomena specifically allowed by the electronic media"* (Lanzara & Morner, 2003, pp. 30-31).

In addition, distributing the environment between modules favors the increase of participation and the grassroots character of participation. The participation of many people in a single (central) place is more difficult to handle.

Division into projects and the resulting decentralization of participation is present in the Wikipedia, Wikihow and openesf.net cases.

125 The decentralization principle is also present in other contemporary collective action forms. From Jackie Smith's examination of the organizational manifestation of transnational social movements, the data shows a consistent trend towards greater decentralization in organizational structures adopted by transnational social movement organizations (Smith, 2005).

Concerning the Wikipedia case, occasions which co-involve the entire Wikipedia community are extremely rare. Most of the activities of Wikipedia are based on interaction in small groups. The same finding was uncovered in the Wikihow case. However, Wikihow is a smaller community and it is common for active participants to know each other or communicate through online means (B. Megas, Interview, August 28 2009).

Concerning the openesf.net case, any participant can take part in any or even all of the projects. In fact, 41,5% of the projects are composed by only one member, the rest are composed of between 2 and 27 members. Projects with 3 members are the most frequent (20,8%).

The Flickr case is different because its primary unit of content is not based on collective "projects" but on individual acts (uploading photos). In this regard, rather than decentralization as such we find structural individualization at the base of the architecture of participation. However, in Flickr too we find the feature of the formation of separate groups around common interests. According to Sieberg, there were 300,000 groups on Flickr by 2007 (Sieberg, 2007). The groups are created around, for example, albums containing pictures of cats or particular events. There are also learning groups on photography techniques, where the participants "learn" from each other. However, van Zwol's analysis of a random sample of 1.8 million publicly available photos indicated that attention in Flickr is concentrated on a small portion of the content, 7% of the pictures account for almost 50% of visits (2007).

Decentralized participation is a significant characteristic of OCCs. It is significant in its contrasts with, for example, traditional social movement organizing, such as the cases of the offline dimensions of the Social forums or the Euro Mayday Parade (a mobilization process related to temporary, vulnerable and precarious employment) (Mattoni, 2009). In traditional social movement organizing, collective action or "doing something together" is conceived of as experiencing moments and places together, such as a decision-making assembly which gathers all participants. In the case of OCCs, collective action is not a moment or place of "unification" but instead a form of being together in a fragmented or decentralized way.

The decentralized and fragmented character of OCCs opens up the question of what links them. Their collective actions are driven by a common mission (as we will see below). However, it is worth mentioning that in terms of the aggregation of the "collective will" (beyond the common mission), the decentralized form of the OCCs, also implies "trade-offs". After observing OCCs I began to suspect that the aggregation of the "collective will" was more problematic in this organizational form. Moments which require a collective "voice" in OCCs, which are therefore difficult to achieve in a community form are, for example, decisions on important changes in the platform's architecture or issues from the external world (such as legal questions). Additionally, the decentralized modules are aggregated because they share the space (the platform) and norms. The use of the same protocols or language links the fragmented or decentralized pieces. In my view, this constitutes a lateral form of aggregation, (more than a hierarchical form or unification by

centralization form) which is essential to the organizational logic OCCs.[126]

e) Transparency of participation

Most OCCs are public. Their public character has to do with external and internal requirements. External here refers to a communicative issue: the goal to spread their content to the external world. The internal requirements refer to organizational issues.[127] In this second meaning, it could also be said that participation develops in a transparent setting.

OCCs are developed in public, indeed it would be more accurate to say OCCs *live* in public. In this regard, from the large *N* analysis of OCCs it emerged that in 88 % of the cases the content of communications among participants is publicly accessible. That is, it is possible to read the content of communications among participants without registering at the site.

The public, or transparent, character of the organizational process favors openness to participation. Participants can take part in the organizational process without having to fulfill any previous requirements. Public organizing also favors the training of new participants. New participants can see how others perform some tasks. Finally, it also favors the autonomy and decentralization of participation and the coordination of participation without a predefined plan or a gatekeeper distributing roles. Participants themselves can identify where contributions are needed and to what level they wish to get involved. These are labeled 'stigmergy' processes, that is where people can perceive where contributions are needed without needing to communicate with others and elaborate a plan. For example, Wikipedians use red links as a way to communicate with one another about which articles need to be written first. Previous research has found that before an article is created it usually already has incoming links in the form of these red links, and that articles get written within a month after the creation of the first red link (Spinellis & Louridas, 2008).[128] Finally, according to O'Mahony's research on FLOSS communities *"a public or transparent development process is necessary to support decentralized decision-making so that a large body of people can learn enough to participate in decisions"* (O'Mahony, 2007, p. 148).

126 Fragmented forms are not "new". Previous historical moments were also characterized by a move towards major fragmentation. Furthermore, fragmentation is not only linked to a period of information and communication in abundance, but also to the lack of it (Bimber, 2003). Nevertheless, thinking in terms beyond the specific OCCs, OCCs pose a series of major questions. How do decentralized or fragmented collective action forms such as the OCCs challenge the Habermasian idea of public space?.

127 Another distinctive characteristic of OCCs is that the same technological artefact can host several requirements at the same time. The same space can be the channel for communication among the participants and the channel that hosts the creation resulting from the interactivity itself. For example, in the case of Wikipedia, the wiki hosts the outcome (the encyclopedia) and the communication among the participants in the knowledge-making. In this sense, the wiki can be seen as a juxtaposition of internal and external communication requirements.

128 Stigmergy is a mechanism of spontaneous, indirect coordination between agents or actions, where the trace left in the environment by an action stimulates the performance of a subsequent action by the same or a different agent without any need for planning, control, or even communication between the agents. As such it supports efficient collaboration between extremely simple agents, who lack any memory, intelligence or even awareness of each other. This type of behavior is typical of some animals (Stigmergy, 2010).

In the Wikipedia case the whole drafting process is visible to all, not only the resulting content. The channels that host the interaction (such as Wikis, mailing lists, meet-ups etc) are public by default. The same is true of Wikihow.

In the case of openesf.net, each project creator may choose how public each project will be. They decide whether the project will be accessible to the general public, only to people registered at openesf.net, or only to members of that particular project. However, the majority of the projects have a public character.[129] The same may be said concerning Flickr, albeit at an individual level. On Flickr, each individual chooses if their content is publicly accessible or not, and thereby if the communication surrounding the content is public or not. However, the important question concerning Flickr is that there is lower organizational interaction between the participants than in the other cases. In sum, on Flickr action is mainly individually driven.

f) Participation is based on autonomous individuals and volunteers

Participation is autonomous, firstly, in the sense that each person has the autonomy to decide his or her level of commitment and how he or she wants to contribute, on the basis of personal interests, motivations, resources and abilities. The autonomy of participants in deciding their actions favors decentralization. The distribution of participation is not based on the centralized planning of action, but on decentralized, volunteer entrepreneurialism from the participants. Additionally, the coordination of participation is not the result of a strict, absolute and fixed plan, but an act open to uncertainty and variation, that is, based on principles of randomness and serendipity. Action happens as they will, spontaneously. The presence of a flexible and pragmatic attitude amongst the participants, who act as issues arise and do not follow a plan of action, leads to the participants having more opportunities to interact spontaneously and adapt their actions to the specific context of each moment (transcripts group discussion on web communities, 2007). This is the case for the four case studies. However, Flickr is the case in which the types of activities that can be performed are most restricted. Additionally, for some of the activities participants have to pay in order to gain access.

Secondly, participants are volunteers. Theirs are voluntary acts sharing with others. They do not have a contractual labor relationship with the community (Waguespack & Fleming, 2004, p. 5), even if some participants may make their contributions as part of their work outside the community (von Hippel & von Krogh, 2003), which is more frequent in FLOSS communities. In a survey of FLOSS communities, Glott, Schmidt & Ghosh concluded that 15.7% of their sample received some remuneration for developing FLOSS (2002, p. 67). As a consequence of the voluntary character of a large part of the participation in OCCs, each participant assumes the costs

129 There was no precise data available concerning the percentage of projects with the different public policy options. However, from a random testing of projects, the vast majority turned out to have selected the totally public policy.

of participation (in terms of time, connectivity costs, and education skills, among others), which results in a distribution of costs.

All the cases share these characteristics of voluntary participation. However, professional photographers who use Flickr as part of their work form a significant part of the Flickr population (Burgess, 2007).

The voluntary character of participation may contribute to increasing participation or is may not: as far as people have the resources required to participate, they will be able to contribute.

The participants are able to contribute according to their own resources of time, skills or money. According to the civic voluntarism model (Verba, Schlozman & Brady, 1995), resources are a key factor in understanding why some people participate whereas others do not. Resource-rich participants with free-time, connectivity, skills and money can contribute more easily than those without such resources, and so the resource-rich tend to be disproportionately represented among participants. In this regard, participation in OCCs could reproduce social and economic inequalities present in society. For example, looking at the gender distribution of participation at openesf.net shows that 36% of active participants are women, while in the case of Wikipedia, previous research has concluded that women accounted for around 12% to 31% (Glott, Schmidt & Ghosh, 2009).

However, OCCs have a particular form to engage participation resources. In this regard, we may need to adapt the resource theories analyses to these types of organizational form. OCCs accommodate the different levels of availability and resources of participants. It could be useful to apply resource theories according to different degrees of participation (active participation, weak contribution and lurking) - in other words, to analyze if there are any systematic differences in distribution along the 90/9/1 principle according to criteria such as age, gender, time, money or income, physical disabilities or the digital divide.130

Furthermore, a lack of resources may not be the only explanatory variable behind non-participation. Even people with the necessary resources may decide not to participate for a variety of reasons such as questions of identity or personality. For example, people who identify themselves as creative and/or are more used to public exposure may be more likely to participate. This is the case for younger generations.[131]

Additionally, the costs (in terms of human force) of producing the information resource, as assumed by the participants, open up another perspective for interpreting the meaning of participation. The resulting information resources (partially or totally, depending on the case) are accessible to third parties who do not contribute to their production. From this perspective, participation appears not as a "privilege", but as a contribution to society or a "donation".

---

130 For an account of the digital divide and how it affects participation see Calderaro (2009) or (2010a).

131 According to Preece, Nonnecke and Andrews' research on lurkers, other reasons why people do not participate in OCCs are as follows: thinking that they were being helpful by not posting; wanting to learn more about the community before diving in; not being able to use the software because of poor usability; not liking the dynamics that they observed within the group; or feeling represented in what was said by other participants (2004).

g) Participation is mission-oriented and methods are plural

The online frame and the available communication possibilities define the possible organization of OCCs, and explain some of the organizational choices, but the agenda of each OCC also shapes organizational choices.

Collective action is understood as the pursuit of a goal or set of goals by more than one person. In this regard, the goal or mission of an OCC is very specific and limited, to build a specific information pool.

I observed that the levels of attachment to the mission in each of the different forms and degrees of participation were different. That is, there were participants who seemed strongly committed, while others did not seem to consider the common mission when they intervened. In this regard, just as there are different degrees of participation, there are different degrees in the identification of each individual with the overall mission. Some participants do strongly identify with and indeed build an identity as part of the OCC. However, participants do not *need* to identify with the project as a whole in order to participate. Independently of commitment to the overall mission lies the value of sharing as an aggregating force. In the same line, Stalder argues that the majority of participants have an individualistic approach to the platform and very few participants have a holistic interest in terms of caring about the dynamic of the whole platform (transcripts group discussion on web communities, 2007). In this regard, OCCs are based on a change in the identity of the individual. From identity building based on a relationship with big projects, such as political parties or churches, there is a move to the development of a *networked individual identity*, "where individual self-identity – both in terms of the image one has of oneself and the image others have of one - can no longer be separated from one's position within a relational network" (Stalder, 2007; Wellman, 2001).[132]

Furthermore, several empirical researchers have concluded that the motivations behind participation are also very diverse (Benkler, 2006; Weber, 2004). Interestingly, researchers point out how OCCs are able to bring together people with very diverse political orientations (Coleman, 2004; Colleman, 2004).

However, independently of the linkage between the common mission and the individual's identity, the overall OCC environment, its architecture and its norms, are shaped by the fulfillment of the common mission.

In order to transmit the relevance of the mission in making organizational choices it is interesting to compare OCCs with other forms of collective action. For example, in the frame of the GJM, organizational choices are greatly influenced by methods ideals (della Porta, 2009), that is,

132 Aguiton and Cardon highlight that the growth of multilateral cooperation online is not based on a political and altruistic identity versus an egoistic one, but, according to their research, on a more mixed situation, lying between the sociological and the economic homo, proposing a new political identity of "public individualism" (Cardon & Aguiton, 2007).

the following of specific methods (such as decision-making by consensus) is ever present in the GJM's organizational choices. In contrast, OCCs are more characterized by the selection of methods according to their effectiveness in fulfilling the mission. As a result, OCCs are characterized by plural methods or polymorphism. That is, the coexistence of several working or decision-making styles. There is no one single way to solve all the situations of the platform, but a flexible approach that adopts several methods. This could also result in a heterachy in the positions of participants.[133] The famous FLOSS catchphrase, "rough consensus and running code" captures the sense that actions that contribute to the accomplishment of the mission are more valuable than the use of a precise method. The methodological pluralism of the OCCs may appear to be a sign of a lack of coherence in the overall system. However, for some researchers, this apparently chaotic diversity becomes a powerful resource for knowledge making and innovation (Brown & Duguid, 1991).

For example, as previously presented, openness to participation is a key principle in OCCs. However, this does not imply that OCCs must follow the same participative method for every task, this will depend on the requirements at stake.

This mission-oriented principle also implies that the organization follows a logic of accomplishing a collective goal, not a logic of the representation of the people involved. This also explains the expectations about and evaluations of the distribution of participation. That is, insofar as a distribution of participation according to the 90/9/1 rule does not create an impediment to the accomplishment of the mission, unequal distribution will not be considered a problem.

Finally, it is worth mentioning that, when analyzing OCCs, this pluralism of methods should be recognized, instead of trying to reduce OCCs to just one of their expressions.

Concerning the case studies, Wikipedia's mission reads *"Imagine a world in which every single human being can freely share in the sum of all knowledge. That's our commitment"*.[134] Sue Gardner, executive director of the Foundation, says: *"we need sufficient people to do the work that needs to be done. (...) But the purpose of the project is not participation"* (Angwin & Fowler, 2009).

In terms of polymorphy or plural methods,, I observed that in Wikipedia most activity is primarily based on open groups on specific articles, using consensus decision-making. However, the community combines this with a heterogeneous, sometimes secondary, mechanism to force decision-making, block the violation of policies and contain the process within certain margins. For example, on some occasions alternative forms of decision-making such as polls and voting are adopted. Heterogeneous forms refer to hierarchies of administrators and other roles with privileges, tasks assigned historically to respected individuals, and a charismatic leader (the founder).

Wikihow's mission is *"to build the world's largest, highest quality, free how-to manual in*

133 A heterarchy is a system of organization replete with overlaps, multiplicity, mixed ascendancy, and/or divergent-but-coexistent patterns of relation. It is therefore not strictly the opposite of hierarchy, but is rather the opposite of homoarchy. See Wikipedia entry for heterarchy (Retrieved April 1, 2010).

134 Source Wikimedia Foundation main page.

many languages".[135] In terms of plural methods Wikihow follows a relatively similar approach to Wikipedia.

Concerning the openesf.net case, openesf.net does not have its own mission, but is a "tool" for supporting the working groups in their roles within a much larger process, the ESF, whose goal or motto is that to *"change the world is possible".*[136]

This lack of a common mission specific to the platform could explain why the plural methods of openesf.net are much deeper and of a different character than those seen in the other cases. Like the other cases, openesf.net is based on different projects or modules. Each of the projects has similar features (i.e., e-lists, wiki pages, etc.). However, there is no fixed structure about what has to be done in each of the projects, as is the case for Wikipedia, Wikihow and Flickr, where what can be done is loosely defined by the architecture of the space and norms. While in the other cases methodological pluralism refers to different methods for solving problems, in openesf.net methodological pluralism refers to different strategies on what to do.

Each group at openesf.net adapts its use of the platform to its own communicational strategies.[137] This makes the incorporation of new participants into openesf.net projects difficult, as a person must understand what each project is in order to be able to contribute. In Wikipedia, Wikihow and Flickr modules share a similar structure, which makes the flow of people and content among them easier.

Concerning Flickr, this is also a peculiar case. Flickr's mission is *"Share your photos. Watch the world"*.[138] Flickr's architecture and norms are framed as a space for sharing more than for working towards a common goal. Additionally, this mission is defined in individual terms. In this regard, the link between the individual and the collective goal is different here when compared to the rest of the cases. The resulting Flickr archive is the result of the sum and meta-synergy of the individual actions. Furthermore, Flickr is also different to the other cases because the architecture of participation and the norms are much more restrictive in terms of what can be done. Importantly, the norms are not defined by the community of participants, but by Yahoo! as Flickr's provider.

135 Source Wikihow main page.
136 Source ESF Web site main page.
137 A typology of projects can be differentiated according to two aspects, the orientation of the content (i.e., exhibitive *versus* open collaborative) and the number of people who intervene (i.e., if the content is generated by more than one person). The distribution of frequency of the type of use and participation in the projects shows that almost 40% of the projects were not used. The most common type is projects that were used only to present an organization (22.6%) and projects that host working groups (20,8%). Then, to a minor degree, link oriented projects or wardrobe oriented projects (5,7%).
138 Source Flickr main page http://www.flickr.com

h) Participation is implementation

Participation is mainly based on implementing tasks by directly creating or editing content. This is not a major risk. Online interaction facilitates the undoing of actions, and so mistakes are not irreparable. Plus, the content is conceived of as a permanent work in progress.

Participation as implementation is a major characteristic of participation in OCCs. As presented in the mission-oriented principles, the environment is shaped by the accomplishment of a mission, building an information resource. Participants "build" or "do".

Participation as doing goes beyond participation understood as deliberation. The goal of participation is not to put together opinions, argue about issues and/or take decisions. To participate is to implement decisions. Deliberation is developed through the creation and undoing of content. There is no separation between decision-making and implementation, nor between a delegation and an implementation body. In this regard, this form of participation goes beyond the principle of participation as it is understood in participative democracy. Participation is not understood as a consultation about a decision to be implemented by public institutions. Instead, participation is actual engaging in the building of non-state public services. Furthermore, participation is not a consultation on the use of collective public resources (such as the participative budgeting approach) but, in line with the autonomous character of participation, the participants themselves assume an important part of the costs of the activity.

This form of participation opens up the idea of *doography* or "implementation democracy". Implementation democracy refers to participants as builders rather than as opinion holders. Doography refers to who decides on (and assumes the costs of) actions. The logic is nothing to do with the representation of visions, but the logic of aggregating forces to work towards a common goal, where whoever does more has more capacity to "decide".

Concerning the case studies, in Wikipedia participants sometimes deliberate among themselves before they edit articles (Viegas, Wattenberg, Kriss & van Ham, 2007). However, even in these cases deliberation among participants is not geared to providing an opinion in a consultation exercise as part of a delegation, but towards implementing changes in the platform. Furthermore, Wikipedia forms a doocracy in two senses. On the one hand, whoever takes care of a particular part of an article decides about it, including the definition of the policies that will govern that article. On the other hand, control of the system is about the ability to bring together forces which will act, more than about favoring certain opinions.

The same can be said for the cases of Wikihow and openesf.net. It is also the case fpr Flickr, although here this applies in an individual perspective.

The last two characteristics, that is the i) self-regulation of the rules and social norms that govern community interaction, and ij) autonomous and free to use and re-use outcomes are not present in all cases, but, as will be presented in the following chapters, fulfilling these two characteristics depends on infrastructure governance. OCCs based on a commons logic of infrastructure governance are self-governed, and a freely accessible outcome results from the interaction. These two characteristics are not present in OCCs based on the corporate logic of infrastructure governance.

i) Self-regulation of rules and social norms

OCC governance refers to the decision-rights, the rules and the distribution of power which ultimately define the form and direction of the process. The online environment has some peculiarities in OCC governance. OCC environments are governed by a complex dialectic between space design or architecture and rules and roles. Although most research on OCC governance fails to consider institutional roles or indeed the role of the platform provider in their analyses.

It is worth highlighting that the design or architecture of the platform space was found to regulate the environment. It was rare for individuals to be involved in direct dialogues and negotiations with others, instead individuals hold dialogues with the environment. In other words, coordination is facilitated by the design of the space and through process such as stigmatization. Individuals react to signs and stimuli received from elements in the platform. Platform design influences participation and interaction in different ways (Stanoevska-Slabeva, 2002). Importantly, it shapes the interaction between the participant and the platform, and among the participants themselves. Platform design is related to the level of inclusiveness, information provision and usability and technical accessibility. Platform design is also related to the level of openness to participation, which shapes the possibility to intervene, as well as the information flow and the possibility for communication among participants. Hence, the design of the platform is important in the governance of the environment. However, something which is commonly ignored in most research is that the design or architecture of the platform is to a great extent already determined by the exact platform put in place, and so it is up to the platform provider to define capacities for action and decisions. The involvement of the community in defining the space depends on the relationship between the provider and the community, as will be argued in this research and analyzed in detail in the following chapters. As this chapter relates to platform functioning, in this section the self-governance of the environment will only be considered in terms of how it effects the rules and roles at the platform. The rules and roles of interaction defined in the platform also contribute to define environment governance, for example by defining the options available in the protocols of participation of the platform, structuring the power distribution between the

participants, or defining the expected social behavior in participant's interactions with the platform and among themselves.

On some occasions, those rules and roles are defined by the communities. According to the large *N* analysis, in 51% of the cases it is the community that is considered to be in charge of deciding policies and the distribution of tasks and roles.

In the cases of Wikipedia, openesf.net and Wikihow, the approach is that community is in charge of defining the distribution of tasks and roles and defining the policies. However, the actual implementation of this is quite different, and involves the intervention of the provider.

In the case of Wikipedia, who carries out specific tasks and the selection of people to be administrators is defined within the framework of the community. Concerning the policies, the community deliberates to define common policies. Furthermore, in the case of Wikipedia there is a general feeling that there are too many policies and their overwhelming amount results in the exclusion of new participants (Lih, 2009b). It is worth mentioning that the definition of the rules also follows a decentralized and autonomous approach. Importantly, policies are defined by those who are interested in discussing and deciding them. Administrators are chosen through elections. However, methodological pluralism also refers to decision-making on roles and rules.

Wikihow follows the same approach as Wikipedia, although the Wikihow case sees more intervention from the provider. For example, the administrators are not selected by the community, but by the provider. Furthermore, Wikihow tried to learn from Wikipedia and seeks to avoid writing too many policies.

In the case of openesf.net, the normative idea is that the community of participants decides the policies or rules and roles. In reality, there is no distinction between providers and community, and so all infrastructure governance is based on community self-governance, not only in terms of rules and roles. However, openesf.net did not generate enough participation to develop a community dynamic of interaction. There are some basic definitions concerning what openesf.net is for, conditions for participation and expected behavior. However, these were defined during physical meetings of the web team charged with maintaining openesf.net and not by the openesf.net platform (D. Moraira, Interview, September 16, 2007; M. Ap Ceridwen, Interview, February 23, 2008; P. George, Interview, June 8, 2008).

In the case of Flickr, although each individual can choose conditions of access and other aspects will apply to the content they generate, participants cannot decide the norms and rules of the overall interaction. Furthermore, no roles or responsibilities for the maintenance of the site are assigned to participants. Importantly, there is no collective decision-making over the roles and rules of the platform, these are defined by Yahoo!. In this regard, in the case of Flickr participation does not imply participation in governance.

In conclusion, openesf.net is based on a self-governance approach with regard to rules and roles at the platform. Participants can intervene not only in the definition of the roles and rules that govern the platform, but can also be part of the body which designs the platform. This is the case

because at openesf.net there is no separation between providers and participants. However, the lack of participation generated by the platform meant a very limited definition of rules and roles. In the other cases the platform design is defined by the provider. In the case of Wikipedia, the community is in charge of defining rules and roles, and has developed very sophisticated mechanisms of self-governance and policies. In the case of Wikihow, this is also the case, but with more intervention from the provider in approving rules and assigning roles. In sum, in openesf.net, Wikipedia and Wikihow the community has a significant role to play in self-governing and defining the rules and roles of the platform and interaction. In the case of Flickr, this is very much restricted. Furthermore, the only possibilities for intervening in rules are at the individual level. In other words, in Flickr the community is not self-governed.

j) Autonomous and free to use and re-use digital commons

The type of ownership of the content in OCCs, regulated by the license, generally promotes free access. In this regard, OCCs provide a public good or service; anyone can access their "outcome". The public character of OCCs' outcomes is also referred to as free or open. On some occasions, the type of license also favors the re-use of the content. In these cases, content can be moved by someone else and it is possible to re-launch the interaction in a different direction. This is known as forking. However, not all OCCs are based on conditions that allow this. According to the large *N* analysis, free licenses for all content are present in 68,1% of the cases. A total of 78% of the OCCs use FLOSS, which also favors forkability, while the remaining 18% use proprietary software.

Wikipedia, Wikihow and openesf.net are all based on FLOSS and collective free licenses, and are therefore forkable. Flickr is based on individually defined licenses and proprietary software – its content is only public and forkable insofar as individual participants choose free licenses for their content.

In conclusion, in regards to the last two conditions, while Wikipedia, Wikihow and openesf.net produce a digital commons; this is not the case of Flickr. Where, **digital commons** are defined as an *information and knowledge resources that are collectively created and owned or shared between or among a community and that tend to be non-exclusivedible, that is, be (generally freely) available to third parties. Thus, they are oriented to favor use and reuse, rather than to exchange as a commodity. Additionally, the community of people building them can intervene in the governing of their interaction processes and of their shared resources*.

VI. II. Conclusions

OCCs share a common pattern regarding the distribution of content contribution. The quantitative analysis of participation in OCCs shows that strong inequalities in terms of contributions are characteristic of these types of collective action. The 90/9/1 principle refers to this unequal distribution of contributions, where 90% of participants lurk or act as an audience, 9% make minor contributions and 1% are very active contributors.

While much literature has pointed to the unequal distribution of participation as characteristic of OCCs, there is a lack of analysis on the main organizational characteristics of the latter, which could allow us to better understand this unequal distribution of participation and, in general, the main organizational characteristics of OCCs.

From the analysis presented in this chapter, the main organizational principles of OCCs are the following: (a) the environment is open to participation; (b) participation has multiple forms and degrees of integration; (c) participation is asynchronous and online; (d) the environment is structured and modular which results in a decentralized but connected participation; (e) the organizational process is mostly transparent; (f) participation is autonomous in the sense that each person decides their level of commitment and how they want to contribute. Plus, participation is voluntary. Participants are not linked by a contractual relationship and participants assume the costs of participation; (g) the environment is framed by a common mission. The methods are shaped by the specific questions the OCC seeks to answer, resulting in a plurality of methods; (h) participation is implementation. Finally, under certain conditions, k) the communities regulate the rules and social norms that govern their interaction; and, j) create autonomous and free to use and re-use digital commons.

From the case comparison it emerged that the Wikipedia, Wikihow and openesf.net cases are satisfactorily described by these characteristics. Although openesf.net is not exactly mission oriented: it is not shaped by the mission of the platform, but by the mission of a larger process. Plus, the modules at openesf.net are not "fractals", they do not all follow the same model. Finally, the public or transparent character of openesf.net does not apply to the whole platform, but to most of the modules.

The case of Flickr is more problematic for this characterization. The core distinction of Flickr in contrast to the other three cases is that participation here takes place on an individual basis. The individual basis also applies to the mission, as this is defined in individual terms. Additionally, the organizational transparency or public character of the outcome only applies where participants have chosen this formula. However, not all the Flickr community does so. Additionally, the individual participants can choose among several options Yahoo! make available; yet collectively the Flickr community does not intervene in the regulation of the platform.

Finally, it is worth mentioning that the technology that mediates the relations in OCCs is likely to change in the coming years. Importantly, the trend of online connectivity is moving from

the personal computer to mobile phone devices (Levinson, 2004). These changes could affect the organizational characteristic of the OCCs in a certain degree. However, the above characteristics were present in OCCs based on very different types of technological support.

What do these organizational characteristics tell us in terms of the potential of participation to increase in size, the type of collaboration and self-governance in OCCs?. Importantly, openness to participation creates the basic conditions for increasing participation. Without the possibility to join the process and participate, there is no possibility of community growth. However, participants are volunteers, that is, they have to assume the cost of their participation. Plus, not all the participants have the same degrees of availability. In this regard, the several forms and degrees of participation allow the accommodation of participants' various degrees of availability. The asynchrony of participation also allows such an accommodation. Ultimately, this permits the maximization of possible sources of participation and an increase in participation levels generally. Furthermore, OCCs profit from the synergy between the different forms and degree of participation. When analyzing the increase in size of participation, there is the need to integrate different profiles, that is, to analyze whether the increase in participation is related to an increase in strong, weak or non-participant types of participants.

The decentralization of participation facilitates its growth while retaining the open to participation organizational characteristic. That is, if all the participants contributed in the same location it would be more challenging to manage their participation. Decentralizing permits the management of large-scale participation, while the autonomous and transparent character of participation facilitates the allocation and coordination of the availability to participate.

The voluntary character of participation and its public outcomes has more ambiguous effects on participation. Volunteers participate if they have the resources required to do so. However, as volunteers themselves must assume the costs of their participation, this reduces the centralized costs of the activity and the need to find ways to cover those costs at the community level, and thus facilitates the collective process. The public character of the outcome may itself be a motivation to participate.

However, participation is implementation and mission oriented; it is not about deliberation and unified opinions, but about *doing.* That is, increasing participation is not a goal in itself, but a means of achieving the mission. All the missions are based on free sharing and collaboration. However, the specific type of mission shapes the type of collaboration established in each of the OCCs, and also gives more or less importance to increasing participation. In this regard, two missions can be distinguished. One is based on highlighting increases in participation because this favors the commercial needs of the providers. This type is characterized by privileging information flows instead of information systematization, and an individual base of participation, rather than building contributions collectively. This is the case of the album or sum of individual contributions type of collaboration represented by Flickr. In this case the increase of participation is the driving force of the environment, not the building of a digital commons. Plus, empirical research on Flickr

reveals that the increase of participation is driven by social networking (Cox, 2008). For example, if a participant posts pictures, her or his friends would visit the platform to see those pictures and comment them. This major personal character of the interaction on Flickr contributes to explain why the public character of the content on this site is decided individually by each user. That is, each participant decides if the content he or she creates can be accessed publicly, or is available only to the set of people he or she gives permission to.

The second approach includes those missions aimed at building freely available integrated resources of information, which require more interaction between participants. In this second case it is the building of an integrated piece of knowledge, not the increase of participation, that is the driving force, This is the case for collage or building upon other works types of collaboration, represented by Wikihow, Wikipedia and openesf.net. (Although openesf.net does not have a mission in itself but supports a larger goal and process).

Finally, the level of self-governance of the community is also shaped by the mission. As was demonstrated in the large *N* analyses, more complex collaboration (that is a collage type of mission) and the presence of a collective goal correlates positively with self-governance.

Ecosystemic participation?

The analysis of the organizational characteristics exhibited by OCCs suggests that they can be usefully regarded as interactive systems (Bateson, 1972; Goffman, 1983). From this perspective, I propose the concept of ecosystemic participation in order to stress the creation of eco-systemic, feedback and synergistic effects between the diverse forms of participation present in OCCs. Furthermore, the term ecosystemic participation highlights the co-dependency and mutual adaptation of the different forms and degrees of participation, in order to strike an equilibrium between them for the sustainability and effectiveness of the common mission. The organizational principles mentioned previously, including openness, autonomy, decentralization, transparency and implementation, form the conditions for ecosystemic participation.[139]

By proposing the concept of ecosystemic participation, my aim is to move beyond the mere recognition that the 90/9/1 principle is present in most OCCs, and that the 90/9/1 principle is also present in many other fields of collective action (such as hyper-links (Barabási, 2002) or income distribution). This concept aims to look at how participation works, that is, to better understand the functioning and the organizational principles of OCCs which result in the unequal distribution of

139 Finally, ecological or systemic approaches have a long and variable tradition and can be adopted in several senses. In this regard, it is worth mentioning that the specific meaning of the eco-system which I refer to here relates to the "internal" dynamics of the individual participants in each OCC. Other authors, including those writing in an evolutionary perspective, use the ecological approach to refer instead to the interrelations, through communications networks, among organizations or collective actors in a shared space (Monge & Contractor, 2003; Monge, Heiss & Margolin, 2008; Monge & Poole, 2008; Shumate, Fulk & Monge, 2005). This must not be confused with the ecological ethics of technology, which refers to the environmental issues related to technology.

participation. More specifically, I look at how organizational principles work rather than at how the 90, 9, and 1 work in isolation by introducing their interdependency into the analysis.

Furthermore, this ecosystemic participation concept is grounded in the deconstruction of the approach to participation as single acts.

On the one hand, I deconstruct the dichotomous approach to participation. The forms of participation in OCCs cannot be reduced to binary schemes. In this line, Bimber, Flanagin and Stohl suggest that recent uses of NTI for collective action challenge the notion that there is a binary choice between participation and non-participation (2005). Ecosystemic participation shifts the focus away from single and unequivocal dimensions (to participate or not participate), towards the development of dynamics in complex cohabitation, and the co-evolution of diverse forms and degrees of participation.

Furthermore, these different forms and degrees of participation are integrated, each playing its own role. In this regard, ecosystemic participation deconstructs the view of unequal participation (through the 90/9/1 principle) into the independent layers of a pyramid. Yet these three degrees - 90/9/1 - are interdependent. The mechanisms of interdependency between them could change across time and with the size of the community.

In this line, the different levels of participation (strong participation, weak and non-participation) play a role; they are integrated and complement each other. Active and committed participants are important to start the online community and assure most of the content; weak participation allows vast and diverse fields of information resources to be reached; unintended participation improves the system and, as audiences increase, the value and relevance of the content and participation in the platform.

On the other hand, the concept of ecosystemic participation moves away from an analysis of participation as an isolated act towards an analysis of participation as an act coordinated with others and overall collective action. An individual decides his or her role according to the overall stage of participation, and acts strategically to fit into the collective action as a whole. In this regard, individuals shape the form and degree of their participation according to the overall collective process.

Furthermore, I consider the adoption of an ecosystemic participation approach suitable for future research. The same applies to analyzing types of collaboration. Ecosystemic participation creates problems for analytical and methodological designs that frame participation as an isolated individual activity and/or that analyze only one type of participation. For example, it is frequent in the literature for the analysis to focus only on strong participants.[140] In my view, these designs are limited and inadequate. Instead, I argue that paying attention to and considering the different forms and degrees of participation in the research design is appropriate. However, using an ecosystemic approach in the analysis of participation clearly represents a methodological challenge.

140 Fed by the Habermasian view that speaking out is more valuable than silence.

Finally, several factors explain the unequal distribution of content generation and why some people in online communities do not participate. From my analysis, it emerged that, in part, the unequal contributions could be associated to the ecosystemic approach to participation in terms of accommodating and combining several degrees of availability among contributors. Additionally, another observation which emerges from my analysis is that the 90/9/1 principle could be related to a phenomenon of multiple-belonging. Individuals belong to several groups. They distribute their belonging among groups. In some groups a participant may have strong ties, while in other groups they may have weak ties or not contribute explicitly. The distribution of participation resources of each individual among the several OCCs he or she could belong to results in the unequal distribution of participation in each OCC. For example, belonging to several groups could explain weak contribution levels. A person belonging to several groups could distribute his or her contributions among the groups she or he belongs to. In this line, empirical research on the GJM also highlights the multiple-belongings or the distribution of activists' participation across numerous groups (della Porta, 2004). Multiple-belonging is also present among Wikipedians. According to my interviews, it is common amongst Wikipedians that a person has a "home project" where they concentrate their effort, and then on occasion weakly contribute to other secondary projects (J. Davis, Interview, November 10, 2008; B. Megas, Interview, November 8, 2008). Additionally, according to Berners-Lee (2007), there is a recurrent pattern that applies to how individuals distribute their belonging among groups of different sizes. One of the possible explanations of this power law in terms of patterns of belonging is that they are a reflex of our cognitive attention capacities and constraints. Further research, adopting field-level analyses and individual-centered analyses instead of case-centric analyses, is required in order to control for this hypothesis.

Chapter VII

The autonomous representational foundation infrastructure provision: The Wikipedia case study

Imagine a world in which every single human being can freely share in the sum of all knowledge. That's our commitment.
Wikipedia mission.

Wikipedia can be considered a "long term" success in the history of the Internet. Wikipedia is an online encyclopedia founded in 2001 and which has grown enormously since then. It contains more than 3 million articles and ranks among the top ten most visited platforms on the Web.[141] It is based on wiki technology which allows each of its articles to be edited by anyone, with changes immediately visible to everyone.

Wikipedia English is the most visible version of the encyclopedia and the reference project. However, Wikipedia also includes more than 200 versions of the encyclopedia in other languages as well as other projects, such as Wikidictionary, Wikiuniversity, Wikicommons, Wikiquotes, Wikisources, Wikinews, Wikiespecies, among others. The infrastructure for all these projects is provided by the Wikimedia Foundation, a North-American non-profit foundation based in San Francisco.

The previous experience of FLOSS demonstrated the possibility of open and collaborative forms of software creation. Once the technology started to spread and reached larger sections of society beyond technological experts and '*geeks',* OCCs based on the creation of "languages" rather than software emerged. In this regard, the possibilities opened up by easy-to-use technologies (such as Wikis and other Content Managements Systems) (Leuf & Cunningham, 2001) incited a *movement* for universal access to knowledge (Stalder, 2010), which also in turn would expand the scope for transforming education systems. The most emblematic case of this was Wikipedia. Wikipedia's great success showed that the FLOSS organizational model was not only applicable to software. Wikipedia constitutes a *classic* among OCCs, a pioneering example. In this view, there is growing a variety of Wikipedia-inspired platforms, for example Conservapedia - an encyclopedia with articles written from a conservative viewpoint, and Congresspedia, a monitoring platform of the USA congress, among others.

Wikipedia has attracted the attention of public debate and academics since 2003 (Reagle, 2010; Liv, 2009; Ayers, Matthews, & Yates, 2008). Empirical research on Wikipedia covers a variety of issues. Due to the large volume of public data available, quantitative analysis was the

141 The number of articles refers only to Wikipedia English. The sources on numbers of articles in Wikipedia English is the Wikipedia English main page http://en.wikipedia.org/wiki/Main_Page. The source for Wikipedia's ranking is Alexa http://www.alexa.com (Retrieved May 18, 2010).

predominant approach in early empirical research on Wikipedia (Viégas, Wattenberg, Kriss & van Ham, 2007; Ortega 2009; Zachte, 2009).[142] An initial area of interest for empirical research was the modes of production and reliability of the encyclopedia's *content* (Emigh & Herring, 2005; Giles 2005; Terdiman, 2005; Wagstaff, 2004).[143] This focus on content and the use of quantitative methods was followed by investigations centering on social aspects and adopting qualitative methods. In this regard, Wikipedia has begun to be analyzed in its global and multi-cultural dimension (see Wikipedia as a place of global memory, Penzold, 2009; and, as a trans-lingual space, Niesyto, 2010).[144]

More recently the number of articles dedicated to Wikipedia's governance has increased. These analyses focus on the community (Konieczny, 2009; Greenstein & Devereau, 2009; Tkacz, 2007), particularly in terms of policy-making in the community (Beschastnikh, Kriplean & McDonal, 2008; Kriplean, Beschastnikh, McDonald, & Golder, 2009; Loubser & Pentzold, 2009; Viégas, Wattenberg & Mckeon, 2007), its decentralized character (Forte & Bruckman, 2008; Malone, 2004) and forms of conflict resolution (Kittur, Suh, Pendleton, & Chi, 2007; Matei, & Caius, 2006). The nature of authority has also been analyzed (Ciffolilli, 2003; O'Neil, 2009; Stadler & Hirsh, 2002), together with studies on modes of selection of administrators, their roles (Burke & Kraut, 2008), and leadership (Reagle, 2007). Although the number of articles on community governance has increased, their range of topics remain limited. Importantly, none of the authors consider the institutional frame or, more specifically, the role of the Wikimedia Foundation as platform provider.

Previous literature has dedicated some attention to community growth by analyzing how the architecture of participation leads to growth (Capocci, Servedio, Colaiori, Buriol, Donato, Leonardi, & Caldarelli, 2006; Spinellis & Louridas, 2009; Suh, Convertino, Chi & Pirolli, 2009). The only previous research that analyses the relationship between community growth and governance also concentrated on community governance rather than infrastructure governance (Viégas, Wattenberg, Kriss & van Ham, 2007). No previous research on how infrastructure governance has evolved over time as the community has grown exists to my knowledge. However, Wikipedia provides a very rich case in terms of how its organizational strategy has evolved as the community has grown over time. In line with my hypothesis, Wikipedia's evolution over time questions Michels' *Iron law of oligarchy*. In this regard, Konieczny's analysis of the decision-making processes of the Wikipedia community suggests that Wikipedia questions the *Iron Law of Oligarchy* (2009). Additionally, whether the organizational strategy of infrastructure provision at Wikipedia confirms

142 To the point that Wikipedia became a reference case in an innovative field of quantitative research on information systems and technologies based on the use of large digital threads as research data.

143 In this regard, in a famous study comparing Wikipedia and Britannia content published on nature, the level of accuracy in Wikipedia entries was found to be comparable to the Britannica articles (Giles, 2005). From a different angle, Stvilia, Twidale, Gasser and Smith 's work focused on predicting the quality of articles according to editing dynamics (2005). Other areas addressed are value and the impact of "vandalism" (Priedhorsky, Chen, Lam, Oanciera, Terveen & Riedl, 2007).

144 As is the case for FLOSS communities, the motivations that lead wikipedians to participate has attracted many researchers (Anthony, Smith, & Williamson, 2009; Johnson, 2008). Additionally, O'Sullivan has analyzed how Wikipedia differs from pre-Internet communities of practice (2009); while Reagle has analyzed Wikipedia from an historical perspective (2010).

the *Iron law of oligarchy* or not remains unexplored. Olson claims that formalization is a source of success in collective action. Wikipedia can be considered a success, but it remains unclear if this is linked to its formal organizational strategy in infrastructure provision.

This chapter will, firstly, present a cross temporal analysis on how the infrastructure governance of Wikipedia has evolved over time, distinguishing several stages of governance in Wikimedia's history. This initial section includes a presentation of how the Foundation functions at present. In this regard, the presentation of the Foundation is accompanied by an analysis of the different approaches to the Foundation's roles that emerged from interviews. In a second section, the chapter addresses the community organizational form and the self-governance of interaction in the platform. The chapter continues by analyzing the relationship between the Foundation and the community. First, in terms of presenting the open character of community involvement in the infrastructure governance in Wikipedia. Second, in terms of how power relationships are embedded in Wikipedia's infrastructure provision in terms of the distribution of functions, ownership and authority between the foundations and the communities. A concluding part analyzes how the infrastructure governance at Wikipedia contributes to explaining the large size and highly collaborative character of the Wikipedia community, and what Wikipedia tells us about Michels' and Olson's classical claims.

I. Wikimedia's evolution in terms of governance and the creation of a foundation

Several governance phases can be distinguished in Wikimedia's evolution.[145]

January 2001: From a founder driven model to a community driven model

In 2000, Jimmy Wales, an American entrepreneur in search of new business models through the Internet, decided to create a free encyclopedia. Wales was educated at home by his mother following an alternative educational approach and wanted to make the encyclopedia free in order to facilitate access to knowledge. He first made Nupedia, which was freely accessible online, but the articles were produced in a traditional expert based fashion. *"Nupedia required a large effort without many results",* Jimmy Wales affirmed (J. Wales, Interview, December 19, 2008). The Nupedia team, composed by Jimmy Wales and Larry Sanger, then came to discover that wiki technology and wikis could be a good infrastructure for the collaborative writing of encyclopedia articles.[146]In this move, Wales affirmed that he was inspired by the free approach present in the Free Software Movement and asked Rikard Stallman (the inventor of Free Software) for advice.[147]

145 This following section is mainly documented via a review of Wikipedia's history drawing on existing sources (Ayers, Matthews & Yates, 2008; Lih, 2009; Reagle, 2010), the history of Wikipedia as it is presented on Wikipedia, and interviews with Wikipedians.

146 Wiki technology was created in 1995 by Ward Cunningham and facilitates the editing of web content (Leuf & Cunningham, 2001).

147 There is a controversy in the literature and in Wikipedia community regarding whether it was Wales

In doing so, the project attracted people who supported the idea of expanding the Free Software model to other areas of knowledge. However, in Wales' interview, he also emphasized that he wanted a free encyclopedia, and the community–driven nature of it was simply "out of necessity". Wikipedia was born in a context of economic crisis in the technological sector, a context in which Wales affirmed that he could not find venture capital to support the project. In his own terms:

> *"Wikipedia is "a child of the dot.com crash (...). When Wikipedia began to grow if I would have been able to go and get some venture capital funding and have money to run it, then I would have thought very differently about these issues. So, for example, if you see a problem on the website or some problem in the community, the normal instinct at Yahoo! is to hire moderators or community managers who work for the company and deal with the end users (...) we didn't have any money to hire so this innovation of really pushing all of the decision making into the community was just because there was no one else to do it."* (J. Wales, Interview, December 19, 2008).

Almost nothing was planned and defined at the beginning of the project. It was more an experimental period. This can also be applied to the site's governance structure. In fact, during this first stage the project was legally part of a Bomis for-profit company which Wales worked for.

> *"In the beginning, very little was thought about (governance structure). (...) It's like a bunch of people got together to do something really cool, then after the fact we have to think about what are the institutional structures to make it work. Can it be a non-profit? Can it be a for-profit? What are the advantages and disadvantages and stuff like that. That kind of all came after the fact. Mostly, it was the idea that brought people together. So it is a little different from a lot of other kinds of things where people explicitly thinking -- I'm founding a non-profit organization or I'm founding a for-profit company to do what ever".* (J. Wales, Interview, December 19, 2008).

This first stage can be characterized as leader–driven, where the founder is the main drive behind the project around whom a community of supporters congregates. This evokes the idea of the *benevolent dictator model*, a model characteristic of FLOSS projects (Gardler & Hanganu, 2010). In this regard, in the beginning Wikipedia was driven by the force of Wales' personality, which defined and shaped the personality of the community around Wikipedia, and which defined the rules which remain at the core of the project (Ayers, Matthews & Yates, 2008). For example, concerning social norms, Wales strongly disliked personal attacks (which are common in other online communities), so he pushed to avoid an aggressive environment. This shaped Wikipedia and resulted in the "*be bold*" characteristic of the Wikimedia community. Concerning rules, Wales defined the *neutrality policy* that says that Wikipedia should not take a stand on controversial issues but just report on them. The *neutrality policy* remains central today.

With a growing amount of interaction between people around the platform, a community dynamic began to emerge. The community started to define its rules and norms. According to

---

or Sanger who had the idea of adopting Wiki technology for Nupedia (Liv, 2009).

Wieves *et al* (2007), the dedication of the community to inverst more effort with regard to decision-making, and to govern itself, for example in terms of policies and bodies, is an evolution we also find in FLOSS projects. The process of defining norms and rules became then depersonalized and separated from Wales. In O'Mahony's analysis of the Debian community, a similar transitional stage from founder-driven to the development of a governance form based on bureaucracy is also singled out (2007).

This first stage ended with the combination of several features. The *Spanish Fork* was an episode that forced the need for formalization and clarification in the governance structure. The rumor that Wales or/and Sanger wanted to incorporate advertisements in Wikipedia had begun to circulate (Liv, 2009). In the literature and among the interviewees there is no common view on whether the rumor was based on real intentions or on speculation. Independently of whether it was Wales' intention or not, the current stage of dependence on Wales resulted in part of the Spanish community deciding to split or "fork". As mentioned, forking is based on shifting content to another platform in order to develop a different direction, in this case to make sure that advertisements would not be introduced. Another factor which contributed to the end of this first stage was that, as Wikipedia became more and more popular, maintenance costs were growing and, as an interviewee said, *"Wales cannot pay the bills forever*" (P. Ayers, Interview, November 14, 2008). A tool to help to sustain the project was needed. Finally, Wales conceived the project as educational philanthropy. All these elements together ended up in the creation of a non-profit foundation, to which Wales donated the infrastructure.[148]

June 2003: The community sets up a volunteer-run Foundation

In June 2003, when a big and vivid Wikipedia community was already in place and with a site which was increasing in popularity, the Wikimedia Foundation was founded. The Foundation was based in Florida, USA, where Jimmy Wales lived, and was run by volunteers.

The Foundation was used as a tool for fundraising to sustain the infrastructure. The Foundation became the owner of the infrastructure and the trademark while the community remained the owner of the content. The adoption of this distribution of ownership was key, but it was not a Wikimedia innovation, merely the continuation of a culture which had emerged in previous online communities on the Internet (Rheingold, 1993). This distribution of ownership is also shaped by the USA legal system, within which, in order to safeguard free expression on the Internet, providers are not held responsible for content posted by users.[149]

Concerning the Foundation's structure, the Foundation was directed by a board. In parallel

148 The costs of Wikipedia were mainly servers and bandwidth. Wales donated the servers, logos and project domains to the Foundation.

149 The US legal system has a set of constitutional and statutory protections that make it harder to hold the publisher responsible. It freed service providers from legal liability over content that they did not originate or develop.

to the Foundation's creation, national chapters with local members were created in other places all over the world. However, the Wikimedia Foundation follows a centralized model concerning infrastructure where projects (even in other languages) are under the USA Foundation's roof. The US Foundation owns all the servers and is legally responsible for the operation of the projects. The Wikimedia Foundation's centralized structure is shaped by the aim to take advantage of the US legal system. As the Wikimedia lawyer put it: "*One of the things that we've tried to do is to structure ourselves so that, if Europeans are going to sue somebody over Wikipedia, they're going to have to come here, where the laws are a little more protective of us*" (M. Godwin, Interview, December 15, 2008).

Thanks to the site's growth in popularity, more and more people found Wikipedia through Google search results and started contributing content (Liv, 2009). In 2003, as Phoebe Ayers, a California wikipedian, put it in her interview: *"a key new generation of wikipedians, called the crooked wave, started participating and became the core of the project"* (P. Ayers, Interview, November 14, 2008). Almost all business took place through online channels until 2004 when local "meet ups" of "wikipedians" began. In August 2005, an international meeting of "wikipedians", called Wikimania, was organized for the first time in Frankfurt. Many wikipedians did not know about the Foundation until the Frankfurt Wikimania meeting.

As previously mentioned, during this period the Foundation was run by volunteers and was experimental in its spirit. However, as Wikipedia got bigger and bigger, the work required to maintain the servers, cover the costs and solve legal questions gradually increased. To cover these needs, the Foundation began to raise more money and hire one person at a time. However, it was an unsatisfactory situation and it was becoming apparent that the Foundation was not growing in a way that scaled, while some chapters, such as the German Chapters, were increasing in importance in terms of gaining autonomy for initiatives and business deals (Liv, 2009; Ayers, Matthews & Yates, 2008). Some of those interviewed described the Foundation of this period as an informal "club" that transmitted a sense of arbitrariness in decision-making. Others said that the Foundation was still depending too much on Jimmy Wales' influence. Furthermore, being based in Florida was "*a little bit out of the mainstream*" (M, Godwin, Interviews, December 15, 2008). Interview San Francisco December 2008) as most emerging ventures are concentrated in the San Francisco Bay Area. Some suspiciousness and anxiety was present in the community. "*The Foundation's relationship with the community was more fraught, tenser*" said Mike Godwin in his interview (M. Godwin, Interviews, December 15 2008).

Some voices claimed the Foundation needed to be repaired and improved by turning around the structure and taking the professional path. Furthermore, with the community's growth, the community had increasing demands and the work required of the Foundation was becoming larger.

In this context, in 2007, the voices in favor of the "professionalisation" of the Foundation gained in influence and the board decided to contract a specialist Executive Director external to the

community, and to move the headquarters to San Francisco.

2007: From a community-driven Foundation to a traditional and professional Foundation

The second half of 2007 saw a restructuring of the Foundation to become more "professional" and reinforce a long-term strategic perspective in order to assure stability, sustainability and growth.

The guidelines of the Foundation in a philosophical sense were to try to strike a balance between the need to be communicative and transparent with the community and have community input, and the need to have experts and a strong professional knowledge base. With regard to this last point, the Foundation reinforced its own final authority (through a contractual obligation with the Foundation's employees) to make sure that certain goals and required fast decisions and reactions were achieved. This was also needed in order to sharpen the division of tasks between the Foundation and the community. In sum, the Foundation reinforced the creation of a sustainable and solid infrastructure for the projects, while reducing the Foundation's interventions in terms of community work on content.[150]

In this process the role of Jimmy Wales was redesigned: his role as platform provider and the Foundation's leader was reduced as will be detailed in the following sections.

In this more "professional" stage, the staff increased to more than 40 employees dedicated to technical maintenance, legal issues, fundraising, communications and administration.[151] Some had a community background, but often had no previous relationship with the Wikimedia projects. A revision of the board's composition during 2008 had also taken place, based, on the one hand, on the formalized need to have board members with professional backgrounds to help with governance issues, and on the other to formalize the relationship between the chapters and the Foundation by allowing the chapters to select some board members.

Some examples of the new re-organization of the Foundation were the rationalization of the trademark strategy and domain names. A plan for business development and partnership was also put in place.[152] These changes represent both a centralization of certain tasks in the Foundation (i.e., infrastructure ownership, control of the trademark) and decentralization as the Foundation

150 In Mike Godwin's words: *"So that at the board level we're primarily making decisions about how to keep the organization financially alive and successful, and help it spread. But we're not normally going to engage in, you know, dispute resolution among editors or censorship decisions, or even, you know, things like whether an article should be edited or not. We're normally going to stay away from those decisions*" (M. Godwin, Interviews, December 15, 2008).

151 Source Wikimenia Foundation staff page: http://wikimediafoundation.org/wiki/Staff (Retrieved May 10, 2010).

152 This includes for example: *"To provide live access to our database for a mobile telephone company that also wants to use our trademarks to market themselves".* This type of business deals are not new in it self: *"Over the last years, the community has always known that the Foundation engaged in various kinds of business deals. The difference is that now it is more systematically and strategically and before it was more opportunistic and random.*" (M. Godwin, Interviews, December 15, 2008).

supported the transferal of some functions to the chapters (i.e., some fundraising). [153]

In this new phase, the qualities that characterize the structure of governance of the Wikimedia Foundation mentioned are “maturity”, “assertiveness”, “seriousness”, “professionallity”, “coherent” and “stable”. Considering the surroundings of the San Francisco Bay Area this appears surprising. In Silicon Valley the new “managerial” values emerging, which were driving the web 2.0 innovations in companies such as Google and Facebook, are those of “fun”, “youth” and “enjoyment” and the work place is designed as a “play-ground” (Tapscott & Williams, 2007).

These changes also represent an ambivalent move in the formation of a closer relationship between the Foundation and the community. The Foundation has lost and won contact with the community. The Foundation lost “organic” contact because the it no longer followed the community’s organizational form and also partly because half of the Foundation staff and some board members were not part of the community. For example: *“the professionalism reflects the ability to grow as a community”* (M. Godwin, Interviews, December 15, 2008). However, the Foundation won contact with the community because of coordination with the Chapters, marked by the increased capacity to coherently respond to community requests.

Some applauded the shift towards professionalization because “things get done” while previously this was not the case, and the Foundation gained in reputation because of that. However, some expressions of suspiciousness and uncertainty also appeared as it generated many open questions, such as the boundaries of expansion of the Foundation’s organizational form into tasks beyond content creation. For example, the employment of staff questions the role of the volunteers that previously took care of Foundation related tasks.

2009: From a traditional and professional foundation to a global participatory foundation

A last stage can be distinguished. In recent years Wikipedia has increased in terms of its internationalization.

Since its inception Wikipedia has had an international goal. The first phase of internationalization took place through the emergency of linguistic projects. Then, to support the internationalization, a transnational network of locally rooted organizations or chapters grew. The chapters are not thematically or linguistically based, but country based. Furthermore, the process of transnationalization followed the official geopolitical distribution of activities globally. In other words, a large majority of the chapters reproduce the same geopolitical map as national-states. Which also reproduces territorial conflicts. (For example, this is the case of the Catalan chapter).

153 As the head of fundraising for the Foundation explains: *“If they are doing well (Fund-raising) then we're doing well and it's a big boost for both of us. So all the support that I can give them I will”* (R. Montoya, Interview, December 17 2008). In Mike Golwin’s view: *“The chapters, which originated to sort of fill the vacuum, to fill the lack of functionality from the central Foundation, now have to figure out what their purpose is now that the Foundation is functional. Mike: “So for example the German chapter which had done a lot of business deals in previous years is now thinking more in terms of fund-raising and Wikipedia academies. You know. Thinking more like a nonprofit and less like, let’s help you produce a commercial DVD with Wikipedia content on it.”* (M. Godwin, Interviews, December 15, 2008).

This process of transnationalization is also very formal in nature. It does not work by a group of editors or fans of Wikipedia getting together as a support group, as with Linux user groups or the Creative commons support groups (Dobusch, 2009b). New chapters are created around a legal entity and have to be approved by Wikimedia's Chapter Committee to become officially recognized by the Wikimedia Foundation.[154] Wikimedia also requires its chapters to sign various formal agreements regarding the use of the name and logo, which regulate what they can do. This formal and traditional territorially based form of internationalization may explain why, in comparison to the growth of Wikipedia language projects, the Wikimedia chapters have grown only slowly. Nowadays there are 257 linguistic Wikipedia communities, 25 of them with high participation; but there are just 27 chapters.[155] According to Dobusch's case comparison, Wikipedia also grew slowly considering the number of Creative commons (Dobusch, 2009b). Despite this slower process of internationalization in contrast to other similar experiences, this stage is characterized by the international expansion of Wikipedia governance. Chapters collaborated with the Foundation in fundraising or promoting Wikipedia. Furthermore, the Chapters were gaining terrain in their formal governance role. For example, It was decided to assign two seats in the Wikimedia Foundation board of trustees to Chapter representatives.

With the consolidated Foundation functioning well in terms of assuring its main functions through professionalization, a larger space for experimentation was opened at the Foundation. In this regard, the *raison d'etre* of this stage in the Foundation's history can be found in the goal of putting in place mechanisms for assuring community-driven agency at the Foundation. In concrete terms, a participatory consultation process for the definition of Foundation strategy was adopted. According to its coordinator, Eugine Eric, the adoption of participative strategic planning was linked to the larger dimensions of the community. In his terms: *"The community is so large that we don't know where we are and we have to ask our self: the goal is to explore where we are now, where we should go, and how we should get there."* (E. Möller, Interview, December 15, 2008).

The major internationalization of the Foundation and the formalization of participative mechanisms was an accomplishment that resulted in the major reduction of the historical power assigned to the founder. The founder remains as a charismatic leader and has a seat on the board. However, he has been forced to reduce special permissions in platform governance.[156]

In conclusion, Wikipedia became one of the 10 most visited websites in the world and one of the largest online communities.[157] Linked to community growth over the years, the costs linked to sustaining the infrastructure that hosts the community have increased, together with external requirements such as the need to solve legal issues. The need to cover the costs and solve external requirements, together with the willingness to have a clear governance structure and

154 Source "Step by step chapters creation guide" page at Wikimedia website. Retrieved June 24, 2010 from http://meta.wikimedia.org/wiki/Step-by-step_chapter_creation_guide

155 Source Wikimedia main page (Retrieved June 10, 2010 from http://meta.wikimedia.org).
and Chapter page (Retrieved June 10, 2010 from http://meta.wikimedia.org/wiki/Wikimedia_chapters).

156 Source Jimmy Wales role page at Wikipedia http://www.wikipedia.org

control by the community, led first to the creation of a legal entity, the Foundation, and then to the move from a volunteer-run foundation to a traditionally organized Foundation. The large size of the community and its internationalization led, in a last stage, to self-research in order to know the community better and define the foundation's strategy.

Wikimedia, by employing a "trial and error" approach, seems to have arrived at a harmonious relationship between the community and the Foundation. A challenging element of such a connection is its hybrid character. Regarding the Wikimedia eco-system as a whole - including the Foundation and the communities – this appears as a "hybrid" form where two different organizational forms and democratic logics are adopted. The Wikimedia Foundation has adopted a traditional organizational and representational democratic logic, while the community sticks to an innovative, but elaborate, organizational model and a democratic logic based on openness to participation. But: What is the distribution of functions between the different organizational forms? What are the strengths of combining two different organizational logics? What are the tensions and challenges of hybrid forms?

II. The Wikimedia Foundation now: Different approaches

At the time of writing, the Wikimedia Foundation functions as a traditional hierarchical Foundation with a strategy geared towards participation. With a 7,5 million dollar annual budget, it has a board of trustees in charge and is directed by an Executive Director at the head of an organizational chart of departments with a total of 40 employees. Finally, it is based in a small office in San Francisco where most of the employees work on a daily basis.[158] This is a short presentation of the Foundation, presenting a quite unified vision of what the Foundation is. However, several views may be distinguished from the interview data.[159] They tend to vary according to the different fields the person has in mind or is involved in (legal, fund-raising or technical).[160]

---

157 Source Alexa.com

158 Source Wikimedia.org

159 A sign of this is that the verbs that were used by the interviewees to describe what the Foundation does in relation to the community were very diverse. The verbs used were: support, provide, serve, protect, facilitate, moderate, and point. Interviewers also explicitly exclude that the Foundation directs and opines.

160 This different approuches were extracted from the analysis of the (J. Wales, Interview, December 19, 2008); (P. Ayers, Interview, November 14, 2008); (M. Godwin, Interviews, December 15, 2008); (R. Montoya, Interview, December 17, 2008); (J. Herrick, Interview, December 4, 2008); (E. Möller, Interview, December 15, 2008); (A. Glenn, Interview, November 20, 2008); (P. Llorente, Interview, August 28, 2009); (P. Ayers, Interview, November 14, 2008); (J. Davis, Interview, November 10, 2009); (F. Fertakh, Interview, August 25, 2009); (M. Snow, Interview, December 19, 2008); (E. E. Kim, Interview, August 28, 2009); (T. Finc, Interview, November 20, 2008); (C. Bass, Interview, November 24, 2008); (R. Handler, Interview, December 17, 2008); (J. Walsh, Interview, November 10, 2008); (K. Bruring, Interview, August 28, 2009); (K. Wadhwa, Interview, December 16, 2008); (F. Schulenburg, Interview, December 15, 2008); (A. Lih, Interview, August 28, 2009); (Gerard M. & Siebrand, Interview, August 27, 2009); T. De Souza, Informal interview, August 28, 2009); (E. Spetz, Interview, August 28, 2009); (I. S. Valdelli, Informal Interview, September 19, 2009); and, (F. Brioschi, Informal interview, September 19, 2009).

- **The Foundation as a vampire:** Some volunteers consider that there is no need for a Foundation. Furthermore they believe that there is a risk that the Foundation will make money from the volunteers' work. This is a minority position, however it was presented in the interviews.
- **The Foundation as a community tool without a voice:** Another view sees a Foundation without a voice, existing only to "serve" the community, and highlights the importance of retaining a "grassroots" method. A variant of this view is to consider the Foundation as at the margins of what the community does and as completely marginal. This view is influenced by the Open and Free Software projects and is mainly held by technical people. For example, in Ariel Glenn's terms, a Wikimedia technical developer: "*The community should be representing the community. The Foundation does not speak on behalf of the community; it doesn't make decisions on behalf of the community. It's just there for service."* (A. Glenn, Interview, November 20, 2008).
- **The Foundation as an adult protector:** One "paternalist" position places the Foundation in the USA as protecting the community. This position is particularly adopted by older people and people involved in the legal and business field. It claims that on certain issues the Foundation has to report to the community, but it does not have to co-involve the community.
- **The Foundation as in any other project** that deals only with certain issues and is a peer of the communities surrounding the projects in the achievement of the mission: According to this view, the Foundation is part of the "big community" composed of all the projects. It is a part that takes care of some specific tasks and is organized around those tasks. For example, in Jimmy Wales terms: "*The people here in the foundation are part of the community. They are a small part of the community. They are a special part of the community, but they are just part of the community. They are the part of the community that deals with the money, the legal framework, the website and keeping it physically running. That's no different than (...) being the English Arbitration Committee, (...) the Spanish Arbitration Committee and these are admins and these are some vandals, but now feel bad about it and are now making something good".* (J. Wales, Interview, December 19, 2008). A variant of this view is to claim the collapse of borders between the Foundation and community is about people.
- **The Foundation as a leader**: Some interviewees argue that the Foundation has to have a leadership role, even more claim a major intervention of the Foundation in community issues.

These different approaches suggest that there is a tension at Wikipedia over the position of the Foundation in relation to the community, from more distance to closer to the community and

from a more pro-active role to a quasi-absence depending on the issue at stake.

VII. III. Community organizational form

The Wikipedia community's mission is that *"every single human being can freely share in the sum of all knowledge"* which is made concrete in the compilation of a free encyclopedia. Wikipedia has achieved a high level of participation around its goal being one of the largest communities online.[161] The community of participants collaborate in the development of articles: the collaboration follows a collage type, the contributions of the participants are merged into a common outcome, the articles.

Furthermore, the community governs the interaction process in the platform. The community governs itself by establishing policies and designing governing roles. The Foundation does intervene in these issues, but only minimally. Beschastnikh, Kriplean, and McDonald find that participation in Wikipedia'ss self-governance is inclusive in practice (2006).

In the evolution of OCCs such as software development communities, a tendency present is that, as a community grows, more effort is dedicated to decision-making, and self-government in terms of, for example, policies and bodies (Wieves et al, 2007). This is also the case of Wikipedia. Furthermore, this tendency is also present internally among the different Wikimedia projects. Smaller projects as Wikidictionary and Commons have less elaborate mechanisms of community self-governance (i.e., less policies and no Arbitration Committee) in contrast to larger projects like Wikipedia English.[162]

Previous empirical analysis on how the Wikipedia community has evolved as it has grown have shown that the fastest growing areas of Wikipedia are not the articles themselves, but the pages dedicated to coordination, planning, conflict resolution and organization, leading to the conclusion that the Wikipedia community places a strong emphasis on group coordination through technical artefacts, policy and process (Viégas, Wattenberg, Kriss & van Ham, 2007).

Yet previous research does not highlight a characteristic of the Wikipedia community's governance which appeared as very significant in this research. This refers to the combination of several sources of authority and the polymorphism or plurality of methods employed for decision-making. On the one hand, the three types of authority or *herrschaft* distinguished by Weber are present in Wikipedia: rational-legal authority (bureaucracy), traditional authority, and charismatic authority. On the other hand, several working or decision-making styles coexist. Wikipedia communities are based on a flexible mix of scale layers, forms of decision-making and democratic logics. In Wikipedia, there is no one single way to solve all the situations faced by the site, but a flexible approach that adopts several methods. The community is characterized more by the selection of methods according to their effectiveness and on many occasions the method of

161 Source Alexa Ranking (Retrieved April 17, 2010 from http://www.alexa.com).
162 They also have less involvement from the Wikimedia Foundation,

decision-making is based on consensus, but in other cases on polling or elections.[163] In Jimmy Wales terms:

> "*Some of the rules that remained core in the project were set by me (the founder), (...) then the day-to-day rules within the community are set by the community through a process that no one really understands, it's quite complicated. It's a process of discussion, debate, consensus, some voting, some aristocracy, (...). It's quite a confusing mix"* (J. Wales, Interview with Brian Lamb, 2005).

The importance of ensuring that "things get done" and "making things happen" is an argument that goes beyond an organization rigidly following a method. For example, comparing the approach of Wikipedia to that of the Social forums regarding decision-making, it highlights how Social forums put the accent on consensus as THE method of decision-making, while in Wikipedia there is much greater flexibility in choosing methods of decision-making.

Most of the participation at Wikipedia is based on a basic form which evokes anarchist principles: small affinity groups of interest interact based on openness to participation without any filters and are self-selected. Participants decide what they want to be involved in. If several people have similar interests, then interaction is generated between them as a group. The size of the group will depend on the number of people interested in that particular article. As Viegas, Wattenberg, Kriss and van Ham have pointed out, participants interact by editing the content of their article of interest, but also discuss and debate how to build the content before editing (2007). This process does not necessarily require collective decision-making, as participants directly "implement" what they consider needs to be done. But on some occasions a decision to be taken is singled out. When a decision needs to be taken, the people involved with the issue will decide, mostly by consensus. For example, in the article on social movements in Wikipedia English, participants interact, editing the article, occasionally they "talk" (in a talk-page which is associated with each article) before they edit in order to coordinate their actions, and on some occasions, they decide by consensus what type of content is more appropriate or if a source is accurate enough to be included.

The neutrality police favor establishing consensus. A Neutral point of view (NPOV) is a fundamental Wikimedia principle and a cornerstone of Wikipedia. According to this principle: *"All Wikipedia articles and other encyclopedic content must be written from a neutral point of view, representing fairly, proportionately, and as far as possible without bias, all significant views that have been published by reliable sources".*[164] Additionally, the type of content Wikipedia deals with does not require an either/or decision, so a middle ground is sought to reach consensus. It is

163 Ironically, the Wikipedia logo is actually a puzzle. In Wikipedia terms: "Wikimedia's present power structure is a mix of anarchic, despotic, democratic, republican, meritocratic, plutocratic, technocratic, and bureaucratic elements". Wikipedia power structure page http://meta.wikimedia.org/wiki/Power_structure (Retrieved May 18, 2010).

164 Source Wikipedia - Neutral point of view page. Retrieved may 18, 2010 from http://en.wikipedia.org/wiki/Wikipedia:NPOV .

typical of Wikimedia decision-making in dispute resolution to develop huge conversations, even about relatively small issues.

The consensus decision-making in Wikipedia follows the principle (well-known in FLOSS) of *"rough consensus and running code".*[165] Rough consensus does imply that the dominant view of the group shall prevail, but does not require that all participants agree, although this is preferred. As Jimmy Wales presents it:

> "*It is the idea of consensus, it doesn't mean unanimity, but it also doesn't mean anything particular. In some cases it means numeric, rough measures, but they are never firm. and it's just the idea -- if most people, and only one or two people are still complaining and their complaints are unreasonable -- as opposed to if you have one or two people still complaining and everybody being "I don't agree, but he's not being unreasonable. I just don't agree." That's a tougher issue and you have to dig deeper then... but if there are only two people still complaining and they're crazy; let's just ignore them and go on. it's that kind of consensus.* (...). (J. Wales, Interview, December 19, 2008).

As these small groups act and take their own decisions independently, the result is that Wikipedia decisions are decentralized (Malone, 2004; Forte, Larco & Bruckman, 2009). As Erick Möller puts it: *"The decisions are decentralized because the questions themselves are decentralized"* (E. Möller, Interview, December 15, 2008). That is, Wikipedia's content is decentralized in independent "modules" or articles in which most decisions are taken by consensus. Forte and Bruckman present Wikipedia as an organization with highly refined policies, norms, and a technological architecture that supports organizational ideals of consensus building. Additionally, Forte and Bruckman describe how governance in Wikipedia is becoming increasingly decentralized as the community grows and how this is predicted by theories of commons-based governance developed in offline contexts (2008). Previous research on the FLOSS project has also concluded that as communities grow they tend to towards the fragmentation of the community into decentralized sub-projects (Crowston & Howison, 2004).

In Erik Möller's terms:

> *"Just in the simplest possible example that you could pick from Wikipedia, there's a conflict about an article and it needs to be resolved. Then it is not resolved by voting, and is not resolved by an intervention of the god-king, the leader of the project. It is not resolved through some huge consultation. It's typically resolved among the five, four, three people having the conflict. Talking on the discussion page about what the nature of the conflict is, and implementing the change that they want to make eventually after they had reached a decision. And most decisions in Wikipedia and thousands of (…) decisions in Wikipedia are made like that every day, including decisions about policy development. Because there's six people who care about the*

165 Source Internet Engineering Task Force (IETF). Retrieved May 10, 2010 from http://www.ietf.org/

policy and the rest of Wikipedia just lives with it as (such).” (E. Möller, Interview, December 15, 2008).

Additionally, issues of decision-making can scale up (Forte & Bruckman, 2008). As an issue increases in interest, there are channels to “scale up” the discussion to make sure everybody interested can take part in the decision. In Erik Möller’s words: *“(When) we know (an issue) is going to impact everyone we actually really have a process that we try to engage everyone to make sure they know that there is a big decision going on and you can participate in (...). There are even people in this area that will say "I don't know, I don't care" (...) so they just stay out.”* (E. Möller, Interview, December 15, 2008).

This basic form of small decentralized groups working by consensus is characteristic of Wikipedia and a large percentage of its activities seem to be organized in this way. However, if consensus does not work or there is a more effective type of decision-making for the issue, then decision–making becomes a varied process and can include voting or polls. A very large majority is needed for something to be decided by vote. In Jimmy Wales’ said in this way:

> "*Sometimes, people do take polls (...) as a kind of democracy. Because sometimes a decision needs to be made and there's no clear answer. Such as a non-binding poll and it's a means of getting to consensus. For example, the encyclopedia article is the Eiffel tower and we're trying to decide between two different pictures and we have two pictures available and some people like one and some like the other one. well, let's assume that there's not enough room for both of them in the article, but that's one answer -- "why don't we have both?" -- but if everybody agrees that we should have one, then what happens is that you can take a poll and you get 70/30. Normally people understand we need a decision, and I'm in the (minority) and it's ok. It’s not going to be perfect, but 70% think that picture A is better and I'm just not going to fight it any more."* (J. Wales, Interview, December 19, 2008).

However, only in a few cases in which it is a situation of either/or, is there voting, and it is very much discouraged in favor of consensus.

Sometimes decisions (taken by small groups) turn out to be problematic. They turn out to be disruptive or/and to affect a large number of people (i.e., turning on a very significant new software feature or developing a new policy that affects every article that can be deleted or kept). These situations can be solved in several ways. Sometimes the communities just stagnate: they cannot reach a decision and the content remains as it was. On other occasions, participants organize a large vote among all wikipedians or a consensus is reached through large size involvement. Eventually a large portion of people tire of the discussion and walk away, which means that the dialogue continues among a smaller group and people accept the result. Or, finally, sometimes decisions are made by implementation: a decision is made by someone directly implementing the change wanted. These decisions stick because someone simply makes them and others do not have enough energy or enough influence in the community to undo what has

been done.[166]

Additionally, some researchers also highlight the importance of considering the role of "bots" when analyzing Wikipedia interaction and governance (Geiger, 2010). Bots are software applications developed by participants that run automated tasks. These processes of interaction and decision-making are governed by decision-making policies and special roles or bodies. In Weberian terms, they are a form of rational-legal authority (Weber, 1978). The decisions on the policies follow the same form as the decisions on content (Forte & Bruckman, 2008). However, there are some policies, such as Neutral point of view, that were defined by the founder in the early stages of the community and remain un-negotiated.[167] Previous research on community governance highlights the importance of collective policy-making (Beschastnikh, Kriplean & McDonal, 2008; Kriplean, Beschastnikh, McDonald, & Golder, 2009; Loubser & Pentzold, 2009; Viégas, Wattenberg & Mckeon, 2007). Actually, Wikipedia has very sophisticated policy regulation. Wikipedia's policies are defined collaboratively through a wiki, following the same method as that for writing the encyclopedia articles (Forte & Bruckman, 2008). Some claim that the large number of policies reduces the inclusive nature of the process (Liv, 2010). However, Kriplean, Beschastnikh, McDonald, and Golder have found that although policies help build a stronger community, ambiguities in policies give rise to power plays (2008).

Secondly, apart from policies, there are distinctive roles and bodies which follow a representative republican democratic logic. There are some participants that have more power than others with regard to technical permissions that allow them to block the actions of other participants. These are Administrators, Bureaucrats and Stewards, with different levels of power and functions (Burke & Kraut, 2008). In terms of role assignment, the criteria for selecting administrators has also been an issue for research (Burke & Kraut, 2008). According to Loubser & Pentzold the participants who are involved in policy–making are very active wikipedians and, more concretely, administrators are more active in developing policy; that is, in Wikipedia there is a heavy bias towards administrators writing the rules. These authors suggest that in Wikipedia there is an overlap between executive and legislative power, as the administrators who are in charge or make the rules stick are also those more actively involved in policy-making (2009). However, Konieczny describes the decision-making processes of Wikipedia and shows that there are many

166 In Erick Möller's terms: "*So sometimes a decision is made like for example you would try to create a new policy for deleting certain articles. And so sometimes an administrator will just delete them! And will do so in contravention of existing policies and practices, and hope that they will, that their change will be accepted, that they, that it will stick. So for example in the English Wikipedia there was a big controversy a few years ago with some tiny issue where a lot of users had these tiny little boxes on their user pages, called user boxes, saying, like, "I am an atheist" or "I am a Christian" or "I believe in – I like this soccer team" or "I like this television series," just like these tiny little boxes that they put in their user pages. And an administrator just decided to delete many of them. And said, that's not what we're about, this is not what an (…) should be doing. We shouldn't be doing this Facebook MySpace type stuff. And that was undone. Other administrators then had a big discussion about it. And in this case it was reversed. In other cases, those decisions stick"* (E. Möller, Interview, December 15, 2008).

167 See page on Neutral point of view policy: http://en.wikipedia.org/wiki/Wikipedia:NPOV

factors preventing or slowing the development of oligarchy, questioning the *Iron Law of Oligarchy* (2009).

Governing bodies are also present for dispute resolution. In Wikipedia English, the highest level is the Arbitration committee. The Arbitration Committee can make binding decisions that ban people from editing in order to resolve some dispute and - when the community has otherwise failed to come to an agreement and it is something that is causing a lot of trouble - then people can file a case with the Arbitration Committee, which will then make a decision.[168]

Positions as Administrators and in the governing bodies are filled through elections among the entire community. Although some basic boundaries are established on who can participate in the elections, such as number of edits made (Dobusch, 2009).

Third, alongside policies and roles and elected bodies there are also historical positions which follow an aristocratic logic. There are certain "old timer" participants who have historically assigned tasks. They have a traditional role for historical reasons more than anything else and they keep these roles because it means that certain tasks are accomplished. In Jimmy Wales' terms:

> *"Raul, who's the homepage bazaar, who decides which featured article goes on the homepage every day which is an important feature. He kind of appointed himself to the role. He took a poll and everyone supported that he should do the job. Not everybody, but whatever he won the poll. This was so many years ago. The system works and no one complains to me so I don't have to bother with it but he's got this position in the community that's somehow unelected, somehow he's had it forever if he did a poor job and people got mad, and said "he's not taking input from others and things like that." then they would toss him out. People would edit war and demand that things change and hold a new poll and find a new system. So there's a lot of little rules like that where people are in charge of something and they've always been in charge of something or their newly in charge of it because of some reason."* (J. Wales, Interview, December 19, 2008).

The founder is also one of these "old timers" who have specific tasks assigned to them. In the combination of several democratic logics, the position of the founder follows a *monarchic* approach, or traditional authority (Weber, 1978).

As mentioned, in its initial stages Wikipedia was largely founder-driven. The founder established rules that have remained central in Wikipedia policy (such as the Neutral point of view policy) and he was also key in attracting other contributors to the projects. His role has been redefined throughout the several stages of governance the community has passed through. Over time, Jimmy Wales' roles have passed from a driving-force to symbolic character. At present, the founder has a special status. Jimmy Wales has a particularly charismatic type of authority over Wikipedia (Weber 1946). Charismatic authority may, in some circumstances, be more "efficient"

168 Source Arbitrarian committe page at English Wikipedia. Retrieved May 10, 2010 from http://en.wikipedia.org/wiki/Arbitration_Committee_(English_Wikipedia)

than a rational-legal authority of well-established rules (Coleman, 1990). Additionally, he also has assigned administrative tasks which allow him some extra powers in Wikipedia English.[169] However, in May 2010, the community considered the removal of Wales's special permissions in Wikipedia English.[170]

Eric Raymond pointed out that in FLOSS projects the leaders are often the founders of their communities (2000). For example, this is the case of Linus Torvalds who is the founder and leader of Linux. However, unlike the Linux case, Jimmy Wales has lost his formal authority over time; while Linus Tarvolds, and other founders of FLOSS projects, retain a formal position of authority. In FLOSS projects, it is frequent to refer to these leaders as *benevolent dictators*. This is a formal position in which the "dictator" is in charge of deciding certain things in the projects, such as when to consider a version finalized. This model is not applied to Wikipedia at this stage, as Jimmy Wales no longer has a formal role.

According to previous research, the founder leaders of OCCs tend to have a non-authoritarian leadership (Bosco, 2006; Yoo & Alavi, 2004). According to Raymond analysis, leaders have to "speak softly," consult with other participants, and "not lightly interfere with or reverse decisions" made by other prominent members or the community (1998, p. 15). Additionally, leadership emerges through action rather than appointment (O'Mahony & Ferraro, 2007; Reagle, 2007).

Weber's analysis of FLOSS cases suggests that these must be characterized by "voluntary hierarchies" (Weber, 2004, p. 160). In voluntary hierarchies individuals participate voluntarily in the process, for example, they are not subject to contractual agreements and they voluntarily accept their position in the hierarchy, because they recognize the need for such a hierarchical position (Stalder, & Hirsh, 2002). The leader does not have sources to retain their "power" over the participants. The leader's power is gained by recognition from the community, once recognition is lost, the power of the leader is empty. These hierarchies must not be considered identical in nature to the hierarchies characterized by representational forms. In conditions in which participants take part voluntarily and are free to not participate, "voluntary" hierarchies are based on trust and power flowing from the bottom to the top, in contrast to representational systems in which hierarchies are based on obligation and in which power flows from the top to the bottom. In conclusion, these types of leadership are based more on power for, than on power over, the community.

In Wales' view, this power increases the less he intervenes. Furthermore, the symbolic role of Jimmy Wales is as the "parachute" of the community. If things were to go very wrong, there is the expectation that Jimmy Wales would intervene, and because the community respects him, his

169 At the English Encyclopedia, the Arbitration Committee is both elected and appointed. Positions on the Arbitration Committee are elected by the community, but based on the votes. Jimmy Wales was in charge of appointing them.

170 Source Wikipedia page on Jimmy Wales role. Retrieved May 10, 2010 from http://en.wikipedia.org/wiki/Wikipedia:Role_of_Jimmy_Wales (Retrieved May 18, 2010).

intervention would put “water in the river” again. This “parachute” role also allows the community to experiment without fear. As Jimmy Wales describes it:

> *“My role in Wikipedia, a big part of it is we're able to experiment with things like the Arbitration Committee without a lot of excessive worry and hand wringing because people trust if the Arbitration Committee starts doing something crazy that I'll say no. There is a certain amount of symbolic role, like I shouldn't have to do anything but it's important that people trust me and they sorta know that in case of case of trouble he's going to make sure that things don't go too crazy and therefore we can experiment. We're free to try something because we know there is a safety valve. There's a way to say, "we're calling this off" which you could conceivably lose if you have democratic processes or rule making over time that can go down a certain path that's unhealthy and we have this in government of course. And so you really want to say I want Obama to be a certain type of person in case this participative thing starts to go crazy, somehow he'll be strong enough to say "ok, I believe in the participatory process, but we're not going to whatever -- have a lynch mob, you know?"* (J. Wales, Interview, December 19, 2008).

As previously presented, the community’s self-governance follows a decentralized and grassroots organizational pattern. Furthermore, the community is set up as a bureaucracy of rules, hierarchical roles and bodies that formally define the authority and distinctive hierarchies. However, authority is not only defined by formal channels, but also by informal sources. Gaining reputation is an important factor in decision-making. According to Stadler and Hirsh’s analysis of Wikipedia, but also other similar cases, reputation rather than sanctions based authority is at work in Wikipedia (2002).[171] In a context in which the possibility to exercise “power” over participants is minor, symbolic sources such as reputation gain in importance in decision-making. Following Weber’s analysis of FLOSS communities, this can be characterized as "voluntary hierarchies". They are not based on the possibility to punish and sanction, but on trust–based principles.

The reputation in Wikipedia is built on the principle of meritocracy. Participants gain influence in the decision–making process and in elections for particular positions on the basis of merit. The more you “do”, the more reputation you gain. For example, people who have done a large quantity of editing in the project or showed fidelity to the project gain respect. "Elders" and the founder in particular gain authority and leadership in the community due to the merits of their previous performances. However, the sources of merit is an issue of contention in Wikipedia. While some voices claim the importance of editing as a merit; other claim the validity of other sources of involvement, such as organizational tasks (such as events) or networking (P. Llorente, Interview, August 28, 2009; P. Ayers, Interview, November 14, 2008). Other sources of authority are networking capacity and access to other participants with influence (for which participating in

171 The other cases analyzed by these authors were the nettime mailing list, Wikipedia and the NoLogo Web.

Wikimania is an important moment). To have connections with the foundation is also a source of respect for some interviewee (J. Davis, Interview, November 10, 2009). Knowing English is not a merit but a condition as much of the activity beyond single projects takes place in English.

Finally, participants not only gain control and the capacity to influence from their own doings and strengths, but also through creating networks. A clan *versus* clan dynamic is thus created in content editing and decision-making (F. Fertakh, Interview, August 25, 2009).[172] This is relevant because the capacity to control the system remains in the capacity to aggregate "doing" forces, instead of opinions.

In conclusion, two principles are very characteristic of Wikipedia: doocracy and meritocracy. On the one hand, doocracy defines the boundaries in decision-making, who is involved in doing or implementing some task and who intervenes in decision-making. Furthermore decision-making is performed through processes of doing, building upon previous actions and undoing actions. "Making things happen", is what is considered important. To change things people have to propose an alternative way to do them: *"It needs doing. And so you can't just complain. You need to propose an alternative way of getting the work done"* (J. Wales, Interview, December 19, 2008). The policy that govern the actions is also decided by those who are involved in those actions. The authority does not come from the top or from a body which is separate from the implementation side of things. On the other hand, those intervening in decision-making or as candidates for particular roles have more or less authority according to their merits. In other words, doocracy is the principle of selecting out, in that it defines the boundary of who can participate in the decision-making; while meritocracy is the principle of selecting in, that is it defines the authority of those intervening in the decision-making.

It might be worth considering that these criteria do not refer to Wikipedia's content. The authority over the accuracy and reliability of the content is defined by a classic approach to sources. As in academic writing, in order for a new insertion to be accepted by the community, editors need to provide reliable sources.

In this section I have offered a general presentation of the communities created around Wikimedia projects. However, not all of the communities work in the same way. For example, the smaller communities, such as Wikidictionary, do not have an Arbitration Committee, and Jimmy Wales' role is particularly relevant in the English Wikipedia, but not in the other Wikipedia.

In sum, Wikipedia's community governance is based on a highly structured form which combines several sources of authority and methods. The combination of these several logics has changed over time in several governance stages and, on some occasions, conflicts between these several logics caused crises within Wikipedia. However, Wikipedia can be characterized as a fruitful ecology of diverse forms of authority.

172 According to Benkler and Shircky the reduction of transaction costs thanks to the NTI facilitates collective action (2008). The resources required for collective action are few and small groups are able to set up a large infrastructure for collective action. However, it is necessary to consider that this also creates a cliquey internal dynamic.

Finally, Wikipedia is based on self-governance. Both formal and informal authority is defined by the people interacting on the platform, not by "external" sources. The Foundation does not intervene in the formal authority of the platform, although some interviewees point out that having connections with the Foundation is a source of respect in the community. Although it is not the central issue of this section, it is important to note here that the environment in Wikipedia platforms is not only governed by the formal and informal sources of authority. The design of the space or the architecture of participation also defines the possibilities of interaction in the platform. In this regard, Tkacz has addressed power in Wikipedia from a Foucauldian perspective, looking at how architecture generates discipline (2007), while other authors have addressed how architecture leads to community growth (Capocci et al, 2006; Spinellis & Louridas, 2009; Suh, Convertino, Chi & Pirolli, 2009). The space's design is in the hands of the provider. As we will see in the following sections, in the case of Wikipedia, the community of participants have some channels to intervene in the Foundation and therefore in the space's design.

VII. IV. Openness to the community of the infrastructure governance

As presented in the previous section, interaction in the platform is self-governed by the community. In terms of governance infrastructure, the Wikipedia case is also based on a participatory governance infrastructure. This infers that the governance infrastructure is driven and controlled by the community. Additionally, both community and provider follow a common mission.

What emerges as an important driving factor in the process is the **mission**.[173] Both the Foundation and the community serve the same mission. A "we" identity formed by the community and the Foundation is the result of the mutual support between the two over the achievement of the mission. They are both peers trying to achieve this goal, and the mission contributes to the establishment of the limits of the process. In this regard, the Foundation is not subject to any community requirements, except for those consistent with the mission.[174]

In Erik Möller's and Jimmy Wales' words:

> *"So, what the community is trying to do, what the community was essentially built to do is to give free knowledge to as many people as possible. And the Foundation was created to support the same cause. It's not the Foundation leading the community, but it's also not purely the community leading the Foundation. (...) the important point I would make is that it's neither about the*

173 This seems to be coherent with respect to Jimmy Wales as mission-keeper.

174 The accomplishment of the mission is what drives volunteers, but also the Foundation staff. To share the mission was more important in the selection of the staff than being an active contributor to the project's content. In Rand Montoya's, a Foundation Fundraiser, words: *"I do consider it my job to help the community. (..) (But) I don't consider the community to be my boss. I think I'm trying just to make the world a better place."* (R. Montoya, Interview, December 2008.).

Foundation nor about the community. A Foundation without the product, without free knowledge, is meaningless. A community without the outcome, without free knowledge, is equally purposeless. So both really only get their meaning from their shared goal, which is free knowledge. That's what it's all about." (E. Möller, Interview, December 15, 2008).

"The Foundation's role is to serve the community but, it's important to note, to serve the community of the people who share in that vision. Wikipedia is not Myspace. I think the Foundation would violate its mission if it (...) said we want to offer a place for people to upload videos like Youtube (...) It's not the Foundation's job to change the mission." (J. Wales, Interview, December 19, 2008).

The Foundation and the community are very different in their organizational forms. While the Foundation is based on power "over" people to implement their tasks (contractual relationship with the staff), the community relies on voluntary self-involvement; The Foundation runs according to an obligatory hierarchy, while the community relies mainly on a lack of hierarchies or on a volunteer hierarchy; the Foundation bases its force in the centralization (in an office) of coordination, while the community is based on decentralization. The common mission forms the relationship between these very diverse forms. The relationship between the Foundation and the community is built upon multiple dimensions. The community is built on the infrastructure provided by the Foundation. This is an aspect that is present in all the case studies. However, the openness to involvement of the community in the governance infrastructure that is characteristic of Wikipedia results in a major relationship between them.

Three dimensions of openness to community involvement can be distinguished in Wikipedia. First, in terms of **structural points of relationship** that link the Foundation and the community; secondly, in terms of the **communication** between them; and third, it terms of doing things together or **overlap** between the Foundation and the communities in the accomplishment of some functions.

The structural relationship between the Foundation and the community refers to the Foundation's composition. The Board of Trustees is the ultimate governing authority of the Foundation. Three members of the Board of Trustees are community members that are chosen by elections in the community. Elections have always been used to choose the Foundation's board of trustees. In these annual elections, community members, with the condition of having completed more than 600 edits in the three months prior to the respective election, choose their representative on the board. Around 3,000 community members participate every year in these elections. Additionally, another two members of the board are selected by the Chapters. Through these board members the community sees its interests represented interest in the Foundation. Additionally, one board position is dedicated to the 'community founder' seat.[175] From the

175 Source Wikipedia page on board elections. Retrieved May 10, 2010 from

interviews with board members and staff, it also emerged that having a community background is a valuable requirement among Foundation staff. Actually, according to their presentation on the Foundation website, around half of the staff have a community background.[176]

However, not all of the Foundation is composed by community members. There is also the objective of trying to balance the necessity of a community-driven Foundation and the necessity of having experts and professional knowledge bases to run the Foundation. In this regard, four of the Board's seats are dedicated to 'specific expertise' seats; and part of the foundation staff do not have a community-background. In Jimmy Wales' words:

> *"A majority of the board comes from the community. We have a commitment that should always be the case. We know that there are other reasons to have other people on the board, and actually this is one of the areas that the community sometime struggles with. Because I think a lot of people in the community (...) don't have business experience or non-profit experience (...). Ideally, the best board member is someone who we'd be super eager to recruit for professional reasons and they have 10,000 edits in Wikipedia. That's great. We love that. We don't always get that."* (J. Wales, Interview, December 19, 2008).

Additionally, the network of Chapters associated with the Foundation are composed by community members.

According to the Board's chair, Michael Snow, the Foundation tries to avoid situations in which it is *"Foundation versus the community".* On the contrary, the Foundation tries to be in harmony with the community. There is a guiding principle that the Foundation needs community input and to be responsive to community concerns and transparent to the community (M. Snow, Interview, December 19, 2008). In order to accomplish this, the Foundation reports, listens and consults the community.

According to Eugene Eric, a member of the Foundation's staff, the Foundation "*owes transparency to the community (...) and to try to experiment new ways through the NTI to be transparent"* (E. E. Kim, Interview, August 28, 2009). In this line, the Foundation reports to the community (and the external world) by regularly releasing information (through reports, maintaining a blog, among others) and with presentations during Wikimania.[177]

Additionally, the Foundation collects the community's input to drive the Foundation agenda and direction through several channels. Through the virtual ethnography it was observed that although present in community e-lists, wiki and IRC, the board and the staff "listen" to the community needs and concerns, get ideas and impressions and also ask advice to solve some questions. Furthermore, there is a mailing list which is a space where interested community

---

http://meta.wikimedia.org/wiki/Board_elections and Board elections history http://meta.wikimedia.org/wiki/Board_elections/history

176 Source Wikimedia Foundation staff page. Retrieved May 10, 2010 from http://wikimediafoundation.org/wiki/Staff

177 Wimikania is the annual meeting of the Wikimedia community.

members get involved in Foundation related issues and can meet and discuss with other community members or the board and the staff. According to Tomasz Finc, a member of Foundation staff:

> *"The Foundation e-list is self-selecting. People sign on to that list, they're not necessarily members of the Foundation, but they're interested in that level of management. And they have a lot to say.(...) And there are various Foundation members who will chime in every now and then, but it tends to be more driven by the community rather than the members of the Foundation. And that seems to do a good job of getting issues out that people have."* (T. Finc, Interview, November 20, 2008).

The board and the staff try to verify if there will be a consensus among the community before implementing decisions. Furthermore, there are other mechanisms that aim to anticipate community reactions before implementing changes, such as formal consultations (i.e. putting fund-raising banners online before publication so that people can comment on them before they appear on the front pages) and there is also a practice of informal consultation with select community volunteers in decisions to be taken.

Furthermore, the Foundation has a Volunteer Coordinator who is the first point of contact and integrates the board, staff and community178. In Cary Bass', volunteer coordinator at the Foundation, words:

> *"Before we make any decisions we get some of the community involved with the decisions that we make. We're discussing with people from the start. (...) So when it happens we already have community members who have been involved in the process who understand. So there's people in the community already to help resolve whatever conflicts are going on, when the conflicts happen."* (C. Bass, Interview, November 24, 2008).

However, in the interviews with staff members it emerged that there is more or less communication depending on the area and worker profile. For example, funding staff mentioned that they do not have much direct communication with community people (R. Montoya, Interview, December 17, 2008; (R. Handler, Interview, December 17, 2008), while daily communication is part of the routine of the technical department or press-communications (A. Glenn, Interview, November 20, 2008; J. Walsh, Interview, November 10, 2008).

Some also called for the development of a more elaborate mechanism to obtain the community's views on Foundation changes and to improve the community-driven nature of the Foundation.[179] In this regard, in 2009, the Foundation decided to experiment with participatory

178 The tasks of the Volunteer Coordinator at the Foundation include: facilitating the distribution of voluntary resources in the Foundation and in the community. In his own words *"when people need people I am there"*; to facilitate the handling of complaints sent by Wikipedia readers to the Foundation; to solve legal copyright or personal privacy violations in the content; and finally, to contribute to maintaining a positive and *fun* environment (C. Bass, Interview, November 24, 2008).

179 In Erik Möller's, Executive Director, words: *"I think that what is missing right now is a better link between the (Foundation and the projects), so better negotiation mechanisms between the Foundation and*

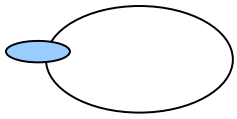
strategic planning. That is, the Foundation set up a participatory consultation in order that the community may define the priorities for the Foundation's direction for the following 5 years. As it is presented in the Foundation's strategic planning wiki: *"The goal is to explore where we are now, where we should go, and how we should get there"*. According to the Strategic planning coordinator, Eugene Eric Kim, strategic planning was well received by the community and raised high levels of participation (E. E. Kim, Interview, August 28, 2009). The participative strategic planning of the Foundation is an innovative form of strategic planning in organizations.

Apart from the Foundation's transparency with regard to the community and the communication between them; the Foundation and the community collaborate in the development of some functions.

One feature characteristic of community-driven governance is the relationship of cooperation and mutual support between the providers and the community, to the point of the creation of a large space of overlap in which a difference between the provider and the community is difficult to establish.

During the interviews, a visualization technique was used, and interviewees were asked to "draft" the relationship between the Foundation and the community. All of the interviewees highlight that the Foundation is very small in comparison to the community, but the important point here is that most of them drafted the relationship between the Foundation and the community as "overlapping".[180] The following figure shows how most of the interviewees drafted the relationship between the community and the Foundation. This is different from a service-oriented model of governance, which is characteristic of close to community involvement providers in which there is no such area of "overlap".

Figure VIII. Type of overlap drafted at the interviews



The overlap between the Foundation and the community is fed by several aspects.

Most of the volunteers concentrate their efforts on content development in the platforms. However, there are other tasks that go above and beyond content development. Organizing the annual Wikimania, organizing local Meet-ups among wikipedians, doing outreach or/and taking

---

the community when things have to be decided. And right now in order to not cause disruption in many cases, the situation is just that nothing happens. So if for example we implement a software feature, and people tell us they don't want it, but we think it's really good, we're not going to implement it because some people have said we don't want it, (…) with this stupid software feature. And we'd rather have a mechanism of actually getting an answer to whether the community wants it or not, as opposed to this sort of, three people say they don't and that therefore becomes the reality because three people have spoken and 97 have not spoken up. So it's the consultation of the community that's (…) ideal, I don't know." (E. Möller, Interview, December 15, 2008).

180 Other words mentioned were: crossover, inflowing and intertwined.

care of the Chapters are very different tasks from working on the encyclopedia. In the words of Phoebe Ayers, a Californian Wikipedia organizer of several Wikimanias: *"It's almost like a really separate volunteer project and there are volunteers who only volunteer on Chapter governance or on Foundation issues, not on contents"* (P. Ayers, Interview, November 14, 2008). Some of this area is covered by the Foundation, but not all. These types of "non-content" volunteers generally work more in collaboration and coordination with the Foundation than the "content" volunteers. Furthermore, there is a type of volunteer that volunteers specifically at the Foundation in San Francisco or for clearly Foundation-based tasks. This is the case, for example, with the translation of the fund-raiser banner. The fund-raiser banner is the banner hung at the wiki for annual fund-raising. The Foundation is in charge of the Fundraiser, but need volunteers to translate it. In this regard, the volunteer coordinator mobilizes community members to do the translations (C. Bass, Interview, November 24, 2008).

Additionally, some issues are discussed in working groups in which both Foundation staff and community volunteers are involved and integrated to the point that it is difficult to establish who is who. For example, there are working groups on press and technical issues.

In Jimmy Wales' terms:

> *"One example in overlap is (...) dealing with the press -- so we have a professional PR person (...) a very experienced spokesperson (...) and we have a communications' committee. It's a mailing list and it's people all over the world who are vetted by the community who are known to me, known to Jay, who answer press inquires and sort of deal with things and deal with messaging"* (J. Wales, Interview, December 19, 2008).

The relationship between the Foundation and the community is also a source of tension in terms of the differences in its open character. Participation in the platform is "radically" open; *"anyone can edit a wiki"* is repeated frequently at the site. If we look at the Foundation the picture is different. The Foundation is not totally "open" to community participation; participation in the Foundation follows a series of filters as presented above.[181]

Several arguments feed this tension. The key issue of this tension does not seem to be having staff or not having staff and acting professionally. For certain things there is a quiet consensus which considers it fair to have staff. In this regard, in not one of the thirty-one interviews was there any mention of an opinion against having staff.[182] Instead, the tension was concentrated on the level of openness to volunteer involvement at the Foundation, and where to draw the line between the Foundation's organizational and democratically "closed" logic and the community's organizational and democratically "open" logic on the issues that go beyond the content. In other words, at what level should the Foundation's organizational form be expanded to anything that lies

181 These tensions seem to be more prominent since the professionalization shift of the Foundation.

182 The criteria mentioned in the interviews for having staff vary from someone who is very valuable and is developing key tasks and dedicating all of his/her time to the side; or the need to have trusted roles that require an obligation over the person or the performance of tasks that require fast reactions.

beyond the encyclopedic content development. In the terms of Kim Bruring, a Dutch wikipedian: "*Everybody agrees on the question that the Foundation has to take care of the servers. But then there are several views on other issues. There is a tension over where to situate the Foundation from a more active role to a less active one."* (K. Bruring, Interview, August 28, 2009). There are many things that go beyond the content that the Foundation does not currently take care of. Some of the interviewees fear the expansion of the Foundation could go too far and ask the question: *Will the Foundation's working system involve all these tasks or will they remain organized on a community base?.* For example, some interviewees expressed their concerns about contracting staff to solve issues that were already solved well enough by volunteers. In Phoebe Ayers' terms: "*I have always had (the approach), like, the more volunteers, the better. If you want to step up and do something, that's good! (...) Other people have said, we really needed staff to do this work, so it would get done."* (P. Ayers, Interview, November 14, 2008).

Additionally, the openness to community involvement in the Foundation conflicts with the representative character of the Foundation. The Foundation and the community follow different organizational and democratic logics and acting together results in clashes of democratic logic in the Foundation and in the community.

The "openness to participation" is a point of conflict between the democratic logic of the Foundation and the democratic logic of the community in two senses. The first clash refers to the representational character of the Foundation. The composition of the Foundation is based on a representative approach. The Foundation's board is elected by the community. The openness to participation in decision-making at the Foundation could conflict with the representative character of the Foundation's composition. In this regard board meetings are open only to board members. But what happens when the decisions are implemented by the staff? Would it be convenient to have volunteers to help them?. This is related to the second clash of logic: the community follows a doocracy approach in which "who does, decides". But this is not applied at the Foundation. The representative character of the board does not sit well with volunteers deciding things. In the Foundation the board decides things and staff implement them - decisions and actions are separate. The respect given to board decisions does not match well with openness to participation, because if volunteers contribute to implementation, they may do so but without aiming to change the decisions of the board.

Apart from open versus closed participation and community involvement at the Foundation, there are other issues of contention at Wikimedia.[183]

183 Other specific issues of contention in the relationship between the Foundation and the community can be identified. One tension is related to the ways in which the Foundation has to generate income to sustain costs. The simple mentioning of an advertisement created one of the major crises in Wikipedia, the Spanish Fork. At present Wikipedia covers its 7,5 million annual budget with an annual fund-raiser (Source Wikimedia Foundation website). At every Wikimedia page a banner asking donations is visible for some months. However, some people conceive of even the fundraiser banner as an advertisement and complain and resist the banner. Resistance to the fund-raising banner has to do with two tensions: the level of "purity" and freedom of the knowledge (without any element visible that could distract the attention of the reader) and the tension that the Foundation creates revenue via the community's work. Another tension is related to the

VII. V. Power embedded in governance infrastructure

In Wikipedia there is a distribution of functions, authority and ownership between the community and the Foundation. But importantly, function, authority and ownership are distributed according to the same criteria.

Work on content relies on the community and the interaction process for content creation is under the authority of the community. As presented previously, the community has authority over its own interaction. In this regard, the community develops its own policies to guide interaction and work on content and also to develop procedures to solve situations of conflict. It is not expected, indeed it is avoided, that the Foundation's board and staff edit the platform's content or intervene in its self-governance. Although there are some exceptions. The Foundation, through the figure of the Volunteer coordinator, intervenes in rare specific cases in the content and platform interaction. For example, this is the case when there is the need to verify the identity of a volunteer in order that the volunteer may perform a particular task that requires their identification (C. Bass, Interview, November 24, 2008).

The Foundation limiting its involvement in content development is a principle that tends to be present in OCCs. This approach responds to the will to assure providers are not saddled with legal liability over the content (M. Godwin, Interviews, December 15, 2008. General Counsel and Legal Coordinator at Wikimedia Foundation). The limited involvement of the Foundation in content development is also related to practical limitations. Foundation members do not have the expertise to contribute to most of the encyclopedia's content. In Ariel Glenn's, Foundation staff, terms:

> *"Frankly! If somebody on a Serbian Wikipedia has a problem with two other administrators and they want to come to us. It's like, do I speak Serbian? Am I an active member (of that project)? Do I have a clue? No! So there's no reason on earth I should play any role or make any decision or express a view, absolutely I should not! That is not our job."* (A. Glenn, Interview, November 20, 2008).

In terms of what the Foundation does, the Foundation provides and owns the technological infrastructure that hosts the interaction and deals with the external world in tasks that require a legal entity, including fund-raising and legal issues and trademarks. As declared in the Wikimedia Foundation's mission statement: "*In collaboration with a network of chapters, the Foundation provides the essential infrastructure and an organizational framework for the support and*

---

trademark's management by the Foundation. This element has to do with managing Wikipedia symbols and to what level to have a freely used logo and to what extent to restrict its use. This is also to do with who the community is and who can use the community's symbol. Finally, the balance between pure free technology formats *versus* guaranteeing accessibility to a larger number of visitors is also a source of tension. This tension has to do with the degree to which Wikipedia challenges the hegemonic technology or accommodates current options. This also refers to what degree to assure its relationship with alternative technology movements (hacker free software movement) and in what degree it arrives to a "mainstream" audience.

development of multilingual wiki projects and other endeavors which serve (the) mission." [184]

To some degree, what the Foundation does can be defined as what the community does not want to do, and needs to be done. Interviewees reported that for some types of tasks it is not easy to find volunteers. Furthermore, the way the community is organized does not allow for the solution of certain questions. For example, these could require a particular expertise and/or a fast reaction. There are issues that the Foundation takes care of that perhaps the community could equally as well, but there is also the desire to ensure these are completed by having staff with a contractual relationship to solve certain delicate issues. Cary Bass, volunteer coordinator at the Foundation, expresses the dichotomy in this way:

> *"The community is good at doing some things, but it's not good at doing other things. And ultimately volunteers are not responsible. You can't hold somebody that's not working, you know, for an income, accountable. People don't always do what they say they're going to do. And what are you going to do, fire them? Right? (...) If we have to guarantee that things get done, somebody has to be responsible for doing that"* (C. Bass, Interview, November 24, 2008).

The Foundation also has authority over its functions and a certain degree of autonomy from the community in its development. Although, Wikipedia being based on open to community involvement in its governance infrastructure, the authority over its functions is community-driven.

In sum, Wikipedia is based on the premise that the community do some things and has some authority and the Foundation takes care of other things and also has its authority. Erik Möller, Deputy director of the Foundation, sees the situation in this way:

"So most of the time roles and responsibilities align naturally with the people doing the actual work. (...) It's the community that's doing the actual work of developing the encyclopaedia. As such, the Wikimedia Foundation almost never gets involved with content unless it really has to. (..). And why should we have authority over what's on the main page of Wikipedia today. Or what article should be deleted. We don't!. Because we're not doing the actual work. (The same for the work developed by the Foundation) The community doesn't tell us how we should run our servers. They're not doing the actual work of hosting the site. And so really it's just in (alignment) of who's doing the work, who's given the chief responsibility" (E. Möller, Interview, December 15, 2008).

Furthermore, ownership follows the same distribution as functions and ownership. In Wikipedia ownership is distributed. The community owns the content and completes the vast majority of the work; the Foundation owns the infrastructure and the symbols (trademark and logo). This distribution of ownership is a consequence of Wikipedia's being based on netenabler conditions. Netenabler conditions imply that the platform runs with FLOSS and the content created is collectively licensed by the community under a copyleft license.[185] Linked to Wikipedia

184 Sources Wikimedia Mission statement page. Retrieved May 10, 2010 from http://wikimediafoundation.org/wiki/Mission_statement

185 Wikipedia software is a Media Wiki and the content encyclopedia is available under the Creative Commons Attribution-ShareAlike License. Sources: Wikipedia.org main page

netenabler conditions, a digital commons is created as a result of the collective action. Wikipedia results in a free encyclopedia and the other sister projects of Wikipedia, such as the Commons (an audio-visual repository) or Wikiespecies (an encyclopedia specializing in species).186

In conclusion, functions, authority and ownership follow the same pattern of distribution in Wikipedia. The distribution of ownership in Wikipedia is linked to "who does the work". The community develops the content; the Foundation provides the infrastructure (with technical maintenance and fund-raising for the costs) and deals with the external world (legal issues and logos). In this regard, Wikipedia's governance infrastructure is based on the principle of "doocracy" in that *"who does the work has authority over it and owns it".* The Foundation has authority and ownership over what it takes care of and has the capacity to do, and the community has the authority and ownership of what it takes care of and has the capacity to do.

This distribution of functions, authority and ownership creates a mutual dependency between the two. The collaboration between the Foundation and the community is also a sign of their mutual dependency. The concept of co-governing can describe a form based on mutual dependency resulting from distributed ownership and distributed capacities and functions. In Erik Möller's terms: *"one cannot really function without (the other)*"(E. Möller, Interview, December 15, 2008).

Importantly, this distributed character of the co-governing model does not imply that there is an equal balance between the Foundation and the community. On the contrary, what the Foundation does is perceived as "minimal". Interviewees highlight the limited capacity of the Foundation. Furthermore, when they were asked to draft the Foundation, all the interviewees drafted the Foundation as much smaller in comparison to the community. Importantly, the Foundation depends on the community more than the opposite. In the terms of Eugene Eric, Strategic planning coordinator:

> *"If the board says something and the community doesn't want to do it, the community's not going to do it". "All of the things that make the foundation powerful are the existence of things like Wikipedia, for example, right?. If there's no community, Wikipedia doesn't exist. So if the community does not agree with what the foundation does, right, then the community has the ability to disempower the foundation"* (E. E. Kim, Interview, August 28, 2009).

In this regard, the concept of "co-governing" may transmit a sense of overestimating the importance of the Foundation while in some sense the Foundation is only marginally participating in governance.

The main counter balance to the power of the Foundation as compared to the community is the fact that the community does the "vast majority of the work". The participation of the community is the main condition for achieving goals. If there is a decrease in participation, the Foundation has

---

http://en.wikipedia.org/wiki/Main_Page

186 See a total list of Wikipedia sister projects at http://www.wikimedia.org/

no way of covering the work the community does. But the opposite could happen, the community could find a way to keep acting without the Foundation. As the community owns the content, it could fork and move the content somewhere else. This is what actually happened at the beginning of the project with the Spanish Fork and is one of the reasons that led to the creation of the non-profit Foundation (Lih, 2009a). The possibility of forking empowers the community in relation to the Foundation, as it creates the possibility of changing provider (Reagle, 2007). In the terms of Eugene Eric Kim, a member of the Foundation's staff: *"I think the great philosophy of empowerment is to allow people to walk away"* (E. E. Kim, Interview, August 28, 2009).

However, the forking counter balance decreases as the community grows. As the community becomes larger, forking becomes a more difficult option. This is for two main reasons: first, the technical infrastructure, owned by the Foundation, is now of large dimensions, and this would be difficult to replace.[187] Secondly, the "network" effect (people link people) inside the community would be at risk if there was no massive migration of the entire community. Furthermore, the relationship with the external world and the symbolic force of Wikipedia, which is mediated by the Foundation, would make forking complicated in this dimension of the community.

In an unequal balance, the Foundation, in order to maintain its position, builds "trust and respect" and its own reputation by "making things happen" (being efficient), assuring the control of the community over the Foundation by being transparent and communicative, and being close to and co-involving the community.

At this stage of the analysis of Wikipedia, it is worth considering two versions or meanings of power: power "for" and power "over". Power "for" refers to the power to accomplish a mission, a force that supports doing something, a tool that allows a move; power "over" refers to control and domination of someone, directing and forcing their actions, and involves an asymmetry between those with power and those over whom power is exerted.

People participate in the development of the Wikipedia content on a voluntary basis, participants are autonomous in deciding at what level and degree to get involved, there is no "forcing" them. The Wikimedia Foundation guarantees certain tasks by building a contractual obligation with its employees. The Wikimedia Foundation works internally with a power "over" logic. In terms of the relationship between the Foundation and the community, the Foundation seems to have limited power "over" the community and the power it does hold is more based on trust to accomplish something for the community than a power to force the community to do something. The Foundation's power works more "for" providing support and resolving questions for the community than forcing and directing the community to do anything. Indeed, the Wikimedia Foundation identifies itself as "empowering" communities. In the terms of the Foundation: The Foundation aims to "*empower and engage people around the world to collect and develop educational content under a free license or in the public domain, and to disseminate it effectively*

187 Furthermore, it risks losing the network effect inside the community if it is not a massive migration.

and globally".[188] Volunteers are not employees; the Foundation does not have a direct source of power "over" the volunteers in order to force them into doing something. In Jimmy Wales' terms: *"They are volunteers and now you're going to tell them what to do. Forget that, it's never going to work and it's just wrong for our community. That just doesn't work."* (J. Wales, Interview, December 19, 2008). The Foundation could force them to not participate, but even then with only a limited capacity. The Foundation could block the infrastructure as a whole (take off the Wiki), but this would go against the interests of the Foundation as well. In Patricio Llorente's terms, president of Wikimedia Argentina Chapter: *"The Foundation cannot do whatever it wants. It is lost prestige, lost authority. What the Foundation does can not contradict the community consensus. The Foundation cannot impose its authority over the community"* (P. Llorente, Interview, August 28, 2009).[189] Furthermore, the Foundation has a limited capacity to "punish" individuals, seven technical employees working at the Foundation could not block many participants, and it would require a massive effort. In this regard, the Foundation is a governance structure without an "internal affairs" department, and without policing. The supervision, monitoring and sanctioning of unwilling behavior is in the hands of the community and involves hundreds of thousands of volunteers.

In a situation in which not every issue and governance mechanism passes through the Foundation and the Foundation has a limited power "over" the community, it seems that the terms of being in parallel and not "over and under" a hierarchy (or in the center) better illustrate the relationship between the Foundation and the communities. Actually, when asked to draft the relationship between the Foundation and the communities, most of those interviewed put the Foundation in parallel with the communities. Erik Möller, Deputy director of the Wikimedia Foundation, expresses this clearly:

> *"Essentially there's no key hierarchy to be aware of. I mean there are obviously hierarchies within each of these entities including the community itself, but there's no hierarchy that puts WMF always above the community or the community always above WMF"*. (E. Möller, Interview, December 15, 2008).

Other authors that have studied Foundations linked to FLOSS projects also suggest a similar argument, proposing the concept of "lateral authority" (Barley & Kunda, 2001; Daft & Lewin, 1993; Miles & Snow 1986; O'Mahony, 2007; Pinchot & Pinchot, 1993; Powell, 1990).

VII. VI. Concluding remarks: How does Wikipedia's governance infrastructure shape the community?

Wikipedia is one of the largest OCCs on the Web,[190] and the largest of the four case studies. Furthermore, it is the most collaborative and sophisticated in terms of community self-

188 Source Wikimedia Foundation mission statement page. Retrieved May 10, 2010 from http://wikimediafoundation.org/wiki/Mission_statement

189 Interview conducted in Spanish. Translation by the author.

190 Source Alexa ranking. Retrieved May 10, 2010 http://www.alexa.com

governance. An initial explanation for Wikipedia's enormous size and success is its start. Wikipedia started in 2001, at a point when there were few other "competing" platforms. In words, *"It had no marketing strategy to draw traffic when it was founded"* (Greenstein & Devereaux, 2009, p.15). Since then, Wikipedia has been able to sustain a consolidated position over time as one of the largest online communities. Some reasons for this are connected to its organizational forms, indeed, the ways in which these have changed over time seem to explain its enormous success.

While most of the previous research in Wikipedia is based on a quantitative approach around the content production (Ayers, Matthews, & Yates, 2008; Emigh & Herring, 2005; Giles 2005; Liv, 2009; Orlowski 2005; Reagle, 2010; Terdiman, 2005; Wagstaff 2004), my research contribute to expand the analysis of Wikipedia from a qualitative perspective on the governance of the process.

The limited articles dedicated to Wikipedia's governance has focus on specific aspects, such as policy-making in the community (Beschastnikh, Kriplean & McDonal, 2008; Forte & Bruckman, 2008; Kriplean, Beschastnikh, McDonald, & Golder, 2009; Loubser & Pentzold, 2009; Malone, 2004; Viégas, Wattenberg & Mckeon, 2007); forms of conflict resolution (Kittur, Suh, Pendleton, & Chi, 2007; Matei, & Caius, 2006); and, modes of selection of administrators and their role (Burke & Kraut, 2008), and leadership (Reagle, 2007). O'Neil (2009) and Stadler & Hirsh, (2002) have pointed to the reputation as one important source to gain authority in Wikipedia. However, none of the previous provides a complete picture. Importantly, none of the authors consider the institutional frame or, more specifically, the role of the Wikimedia Foundation as platform provider.

The research revealed that a key characteristic of Wikipedia's governance is its hybrid character. On the one hand, the Wikipedia community combines several sources of authority and employs a plurality of methods for decision-making. On the one hand, the three types of authority or *herrschaft* distinguished by Weber are present in Wikipedia: rational-legal authority (bureaucracy), traditional authority, and charismatic authority (Weber, 1978). On the other hand, several working or decision-making styles coexist. Wikipedia communities are based on a flexible mix of scale layers, forms of decision-making and democratic logics. In Wikipedia, there is no one single way to solve all the situations faced by the site, but a flexible approach that adopts several methods.

On the other hand, in terms of the strategy of infrastructure provision, this research shows that the infrastructure governance of Wikipedia has contributed to shape the community generated, and explains the large dimension of the community. The ability of Wikipedia to evolve in terms of infrastructure governance over time seems to be an important reason behind its success. Wikipedia has been able to adapt organizationally to changing provision needs as the community grew over time. In this process, Wikipedia combines several organizational logics depending on the requirements of each stage. Wikipedia's hybrid nature combines a Wikimedia Foundation based on formal and traditional organizational forms which are well adapted to guaranteeing the

technical sustainability and legal protection of the community; while the community is organized in an open and decentralized way, which is better adapted to knowledge-making. The open character of the Wikipedia Foundation also favors the availability of voluntary resources to reinforce infrastructure provision; while its formal organization favors the capacity to raise monetary resources, also to reinforce infrastructure provision. The Wikimedia Foundation's non-profit character (and transparency) and netenabler conditions also contribute to increase trust and motivation for certain parts of the population to participate and contribute to the platform. In sum, the core reason for Wikipedia's governance infrastructure and facilitating its increase in size seems to be its availability to coinvolve the community in the control and design of the infrastructure, which is a source of major trust, while at the same time being able to organize effectively the provider's tasks.

Wikipedia provides a very rich case in terms of how its organizational strategy has evolved as the community grew over time, which allows us to study whether or not Wikipedia confirms Michels' *Iron law of oligarchy* and Olson's claims that formalization is a source of success in collective action. According to my analysis, Wikipedia's evolution does indeed put both of these classical claims in doubt. Konieczny's analyses of the decision-making processes of the Wikipedia community suggest that Wikipedia questions the *Iron Law of Oligarchy* (2009). According to my analysis, formal organizing is not characteristic of the evolution of the Wikipedia community's organization, which challenges Olson's (1965) conclusions. Wikipedia is scale-free in the principles of openness, decentralization, and doography. Even if over time a more sophisticated model of self-governance of the community has emerged, with some bureaucratization in terms of policy definition and role assignments, these do not occupy a central role. The principles of openness, decentralization, and doography remain central in the evolution of Wikipedia, independently of the size of the community.

In addition, in terms of the organizational strategy for the provision of the infrastructure at Wikipedia, the hybrid character or equilibrium in terms of combining formal and informal organizing seems to form the essence of the case's success, much more than the mere adoption of formalization paths in Olson's (1965) terms. Even if Wikipedia were to go through a stage of evolution towards a more formal organizational strategy for infrastructure provision, the formalization path is not a one-way evolution. The cross-temporal analysis of Wikipedia indicates that once some provision functions were stabilized and guaranteed, the Wikimedia Foundation entered a stage of major experimentation. In this regard, Wikipedia only followed a formalization path up to a certain point, and then returned to informal experimentation.

Chapter VIII

The assemblarian self-provision of online platforms of participation
The social forums case study

Another world is possible
Charter of Principles of the World Social Forum

The GJM is defined by della Porta as *"the loose network of organizations (with varying degrees of formality and even including political parties) and other actors engaged in collective action of various kinds, on the basis of the shared goal of advancing the cause of justice (economic, social, political, and environmental) among and between peoples across the globe."* (2007, p. 6).

Three dimensions can be differentiated in the link between the NTI and the GJM: the NTI as a *field of struggle*, as *organizational metaphor,* and as a *mean*. With the increasing importance of the NTI in society, access to the NTI as a *communication right* is becoming a **field of struggle** (Milan & Hintz, 2004). The second linkage of the GJM with the NTIs is that of an ***organizational metaphor* for movements**. The image of the network as an organizational metaphor became present within the movement's imaginary during the 1960s (Turner, 2006). With the Internet conceived as the network of networks, the Internet gained centrality as an organizational metaphor in the discourse of the GJM (Castells, 2001; Juris, 2008a). This imaginary derives from the concept of building an organizational model based on a *network logic*, *defined as "the distribution of horizontal and flexible autonomous nodes that receive, recombine and circulate freely the information in a growing faster speed in order to act coordinated and when needed taking decision by direct democracy"*[191] (Fuster Morell, Bergel, Duran & Juris, 2005: p. 125).[192] The FLOSS *development model in particular* appears frequently as organizational metaphor, one that is based on free cooperation, collaborative and collective building, and open access (Networked Politics, 2006). Finally, the NTI is used by social forums, and generally by the GJM as a ***means* of communication and an organizational environment.** This last aspect is the central consideration of the analysis in this chapter.

The GJM adopted NTI to build an infrastructure of communication and coordination to support their mobilization process (M. Matsuzaki, Interview, October 2009; A. Gunner, Interview,

191 The original text was in Catalan. Translation by the author.
192 Following this metaphoric language, encounters like the social forum would become "hubs" - nodes connectors, which was the name given to one of its autonomous spaces during the first ESF at Florence (Source ForumPedia.Retrieved June 20, 2008 from http://www.euromovements.info/yearbook). The self-definition of the WSF as an "open space" also demonstrates a similar indebtedness (Whitaker, 2004).

September, 2008). The distinctive emphasis on open and participatory methods characteristic of the GJM (della Porta, 2005c), which contrasts with the more hierarchical methods of the past, has also been applied to SMOs to the use of NTI and to methods of knowledge management and creation generated by the GJM (*Santos*, *2007;* Wainwright, 2005; Investigaccio, 2005; Fuster Morell, 2004, 2009). Particularly relevant examples are Indymedia, an alternative media platform created to openly report on the mobilizations against the World Trade Organization in Seattle 1999, and protest.net, a collaborative calendar of action. This communication infrastructure was extremely innovative at that time (M. B. Hill, Interview. Boston, October 25, 2009; E. Rabble, Interview, August 28, 2009; J. Kirdahy-Scalia, Interview, November 2009).[193] Later, online platforms for the collaborative systematization and creation of the social memories and knowledge created by mobilization processes emerged (M. Berlinguer, Interview, December 13, 2007).[194] Examples are the Global Archive of the People's Global Action network, which documents the Global Days of Action, or the Open elibrary for social transformation.[195]

The assemblarian self-provision model is distinctive of infrastructure governance within the framework of the GJM. This chapter will address this type of infrastructure governance. The analysis will be developed though the concrete case of the OCCs promoted by the social forum. The social forum is a series of gatherings used for networking and the building of alternatives to neoliberal globalization, and have been taking place since 2001. The online platforms provided by the social forums were set up to collect 'forum memories'; a participative definition of the forum program; and to develop a decentralized “process”.

The analysis of this case will allow us to better understand the functioning of the assemblarian self-provision type of infrastructure provision in terms of how it shapes the relationship between the infrastructure provider and the community, and in terms of what conditions of freedom and autonomy it is based on. According to the large *N* analysis, this type of infrastructure provision raises the lowest levels of participation in online platforms. This is the case for the OCC platforms promoted by the social forum. Additionally, the large *N* analysis revealed that the OCCs associated to the social forums were ranked number one among failed experiences, meaning that at a certain point in the research process the platforms were no longer accessible. In this regard, this case study will allow us to better understand the reasons why the self-provision, assembly type of infrastructure provision is the "weakest" in terms of raising participation and collaboration within platforms, and also to extract lessons from this failed experience.

Empirical research has assessed the adoption and use of NTIs by different global or international SMOs (McCaughey & Ayers, 2003; Baringhorst, Kneip & Niesyto, 2009; Bennett,

193 For example, Indymedia became a reference point for *open publishing* and user-generated content.

194 For a explanation of the emergency of online platforms for the collaborative systematization and creation of the social memories and knowledge see interview conducted by Lorenzo Mosca to Mayo Fuster Morell - Member of Memory Project and Euromovements, Florence, 2007. Other source see DVD “Debate on techno-political tools.” Infoespai. Barcelona, 2006.

195 The People's Global Action Archive is accessible at http://www.agp.org and the Open elibrary for social transformation at http://www.openelibrary.info

2003, 2004, 2005; Chadwick, 2007; della Porta, 2006b; Garrett, 2006; Loader, 2008; Mosca, 2006, 2007, 2010; Val Laer, & Van Aelst, 2010; Van Aelst & Walgrave, 2004; van den Donk, Loader, Nixon, & Rucht, 2004). For example, Cammaerts and Van Audenhove researched how transnational social movement organizations use NTIs to organize, mediate and influence (2003). Van Aelst and Walgrave analyzed the use of the NTIs in organizing protests in the GJM (2004), while Breindl analyzed how European campaigns become Internet-based (2010).

At first, empirical studies were apprehensive about the possibility of online collective action (Diani, 2000; Rucht, 2004; p. 80); while more recent studies look at the different technological strategies utilized by campaigns (Bennett, 2003; della Porta & Mosca, 2005; Juris, Caruso & Mosca, 2008; Kavada, 2007). Researchers pointed out that NTIs are a cheap and fast way to communicate beyond borders. Della Porta and Mosca pointed out that by *"facilitating cost-effective and swift communication on a global level, the Internet has magnified the scale and scope of the movement"* (della Porta & Mosca, 2005, p 170). Benneth and Smith state that NTIs facilitate mobilization and favor more flexible and looser organizational forms (Bennett, 2003b; Smith, 1997), in contrast to previous means of communication among SMOs which were relatively expensive and tended to foster centres of communication (van de Donk et al. 2004, p. 9). Finally, Bennett observes that NTIs contribute to building alliances among plural movements and help develop plural and diverse collective identities, since *"the ease of linking to these digital networks (...) also eases the demand to continually renegotiate collective identity frames as movements shift in scale."* (Bennett, 2004, p 129)

Initial studies also pointed out that NTIs used to be affected by differences in resources, degree of institutionalization, and organizational structure (Kavada, 2005; Pickerill, 2004). *"Afterwards, the literature turned to consider "cultural and ideological understandings driving the use of such technologies and move beyond 'our inclination to see organizations as actors rather than as made up of actors and their interactions"* (Polletta, 2002, p. 225, emphasis in original), paying more attention to the internal life of the movement (Kavada, 2007a).

With specific regard to social forums and technology, previous research concentrated on NTI as a field of struggle within the social forum agenda (Milan, 2004; Milan & Hintz, 2004).[196] Research has thus concentrated on analyzing the type of use of technological tools (from e-lists to translation tools) by social forums. Particular attention was paid to the politics of technology at the forums, referring to the different visions and approaches regarding technology present. Della Porta and Mosca analyzed the Genoa Social Forum 2001 and the ESF 2002, among other questions these authors examined the changes that the NTI introduce in SMOs (Della Porta & Mosca, 2005). Caruso developed empirical research on the adoption of free software at the WSF 2004 by investigating the organizational, political and technical interactions at the level of the office of the

196 With the growing of importance of NTI in society, access to NTI and its consequences, defined as communication rights, is becoming an area of continuous struggle, and is being incorporated into the GJM and social forum agenda. A rich case of a transnational social network on communications rights is The Association for Progressive Communications (http://www.apc.org).

organizing committee of the WSF 2004 and with reference to the management of the WSF 2004 website (Caruso, 2004).[197] Kavada`s analysis of the 2004 ESF linked diverse attitudes towards NTIs within the ESF to the actors' understandings of democracy, strategy and the nature of the social forums. Kavada focused *"on a specific line of division within social forum politics, that between the old radical left and the new left or between command-type and horizontal politics"* (Kavada, 2007a, p. 3). Kavada also analyzed the role of e-lists devoted to organizing the 2004 ESF in the process of collective identity construction (Kavada, 2007b, 2010).[198] Comparisons of the democratic quality of SMO websites has been also carried out (della Porta & Mosca, 2005; Mosca, Rucht, Teune, & Lopez, 2009). This research emphasizes that what on some occasions appears as a "technical" divergence around the use of technology can undermine clashes of political interest that drive conflicts; in this regard, one goal of this research is to present how the adoption of technology reflectsed the political goals of the forum. This body of research is also characterized by its refusal to approach the social forums as an homogeneous actor. In Bennett's terms: *"[d]igital media applications can take on a variety of forms, from closed and hierarchical to open and broadly distributed. Preferences for the latter pattern reflect the social, personal, and political contexts in which many global activists define their mutual relationships"* (2004, pp. 125-6). In Kavada's view, in a movement as internally diverse as the GJM, what we first identify as the general attitude of a movement towards NTIs may actually be the product of a fierce internal struggle that reflects the configuration of power relations within the movement (Kavada, 2007a, p. 3). In this regard, the richness of the social forums as a meeting point for a plurality of views that construct an "ecology of diversity" is perhaps also indicative of the diversity of approaches to the adoption of NTIs. Synthetically, in the social forums different political visions co-exist in association with particular uses and understandings of technology.

Caruso proposes a distinction between two paradigms concerning technology in the 2004 WSF: the "productivity paradigm" and the "process-prefigurative paradigm" (2005), while Kavada proposes "horizontal" - 'collaborative lab' *versus* "vertical" - broadcasting logics for the 2004 ESF (Kavada, 2007). The categories "bottom-up" versus "top-down" are also frequently used within the literature (della Porta & Mosca, 2006). According to Caruso, Juris and Mosca:

> *"On the one hand, these struggles were related to the classic argument between the old and new Left over technocratic versus political approaches to social*

197 Since 2004, the WSF has undertaken significant efforts to run Free Software. The four domains where Free Software was used were: the office of the organizing committee, the website, the media centre and the translation system. The different approaches to the adoption of Free Software, mainly between the efficiency oriented and the "open space" discourses, provoked some conflicts. The opposition between corporate and activist mentalities due to the entrusting of the development of the WSF 2004 website to an external company was also a source of conflict. (Caruso, 2005, p. 173)..

198 According to Kavada: *"The results show that depending on their purpose, composition and geographical scale, the email lists afforded different communicative practices, themes of exchange and degree of interaction. While, the factional list aided in the emergence of coherent collective identity for its members, the European list was fragmented and used mainly for the circulation of statements. These online spaces were further connected through overlapping memberships and flows of content in a way that mirrored the hierarchies of physical space. Ultimately, the ESF email lists constituted an infrastructure for the simultaneous development of multiple and intersecting identities within the movement"* (Kavada, 2007b, p 1).

change. On the other hand, they represent the clash between distinct ways of viewing politics: the "old" of the traditional Left (political parties, trade unions, large NGOs), and the "new" (...) small anarchist groups, "open space" advocates, and horizontal organizations with diverse ideologies. In this regard, closed, centralized information systems (including closed source and proprietary software) tend to go along with hierarchical structures. By contrast, open, accessible informational environments favour horizontal networks, peer to peer collaboration, and grassroots participation" (Juris, Caruso & Mosca, 2008).

The controversial issues surrounding technology could be presented in different forums. As Juris, Caruso and Mosca concluded from their comparison of the 2004 WSF Mumbua with several editions of the ESF and the 2007 USSA, similar issues and conflicts have surfaced in forum processes within vastly different social, cultural, and political contexts (2008). *"Despite (...) place-based specificities, the issues addressed were remarkably similar across distinct locales, suggesting the inherently political nature of new technologies and perhaps the increasing globalization of struggles surrounding them as well"* (2008, p. 118).

Although forum processes are similar within vastly different social, cultural, and political contexts, time appears as a significant and distinct factor as the politics of technology in the social forums change over time. Examining the NTIs adopted at the ESF from 2001 to 2010, the ESF tends to adopt technologies that are more pro-participative and in favor of collective creation.

In conclusion, research on the politics of technology illustrates the connection between technological uses and the visions and political strategy of the forum itself (Caruso, 2004; della Porta & Mosca, 2005; Juris, Caruso & Mosca, 2008; Kavada, 2007a, 2007b; Mosca, Rucht, Teune, & Lopez, 2007). However, the role of the social forums as platform providers and the governance of the OCCs hosted by the social forums remains unexplored. Although previous research pointed out the extensive use of e-lists within the framework of the social forums (Kavada, 2007a) and the preference for FLOSS (Juris, Caruso & Mosca, 2008), research analyzing the adoption of web platforms is limited (Saeed, Rohde & Wulf, 2009). Furthermore, previous research on social forums has not analyzed the failure to raise online participation in web platforms. The lack of analysis of cases of failure can also be extended to OCCs more generally.

This research will build on and go beyond the previous body of literature on the politics of technology in the social forums. Following the literature on the politics of technology in the social forums, this research will analyze the unexplored case of the social forum's adoption of online participation platforms. Coinciding with this approach, the analysis of the social forum approach to technology will not be consider this actor as monolithic, but will examine the visions present at the social forum and their connections to various organizational strategies. However, going beyond the literature on the politics of technology, this analysis will also consider the "outcome" with regard to how the "ecology" of approaches to technology impacts on online participation and collaboration.

Ultimately, the analysis will look at why the organizational strategy of the social forums in terms of online platforms of participation resulted in the failure to mobilize.

In contrast to other types of OCCs, those promoted by the social forums have some distinctive characteristics. They are connected to a political process, the social forum process. social forums are gatherings for networking and building alternatives to neoliberal globalization. They have been the main meeting place of the GJM since 2001. Within the framework of the social forums there have been several attempts to provide or adopt online platforms for participation and the generation of OCCs. In this regard, from the analysis of the social forum case study, it emerged that it was necessary to examine the provider from the perspective of its own particular approach to the online participation platforms as well as the process of deciding to adopt such platforms.

In this regard, the social forums themselves are offline participation platforms, complemented by online participation platforms. Furthermore, both the online and offline relationships established between the social forum as platform provider and the communities in the platforms provided by the forums share some similarities. The conception of participation found in the offline platforms alongside the approaches to online platforms present in the forums have shaped the online participation platforms. Furthermore, this suggests that collective action today adopts a distinctive organizational form which can be identified in both the online base and the offline base.

The primary unit of analysis for this case are the OCCs promoted by the social forums. However, the social forum case is interesting in both an on and an offline perspective. Throughout this chapter attention will be paid to similarities and differences between the two.

The chapter starts with a cross-time analysis of the evolution of the social forums in terms of governance and the adoption of online platforms of participation. It presents the organizational form that characterizes the social forum as a platform provider, and how it shapes infrastructure provision in terms of openness to community involvement. The analysis is not based on an isolated approach to the forums, but looks at the tensions and opposing views within the forum concerning the adoption of an online platform (openesf.net). Following this, attention will be paid to the community and dynamic online interaction. Finally, the social forum's approach to the netenabler conditions of the forums will be analyzed, as well as the contrasts between the distribution of functions, authority and ownership present in the case will then be addressed. Finally, the chapter will examine how the social forum's infrastructure governance shapes the community generated in its online platforms.

VIII. I. Diversity and the evolution of cross-time governance in the social forum [199]

Most authors (Tarrow, 1997; Tilly, 1991) share an emphasis on three historical cycles of protest and collective mobilization in western societies. The first is conventionally associated to the period spanning 1848 to the Second World War. It is characterized by the sprouting and protagonism of the labor movement in all its variants. The second cycle finds its symbolic epicenter in the French experiences of May 1968 and includes the mobilizations of the 1960s and 1970s, named the New Social Movements. At the present time we are immersed in a third cycle, with the GJM as its protagonist (della Porta, 2007a, 2007b).

The Zapatista uprising against the North American Free Trade Agreement (NAFTA) of 1 January 1994 marks the symbolic beginning of the GJM (Abramsky, 2001). Five years later, on 30 November 1999, as the Millennium Round of the World Trade Organization (WTO) met in Seattle, mobilizations were carried out in at least 19 places around the world. In Seattle 20,000 people of diverse backgrounds (trade unionists, ecologists, feminists, internationalist organizations of consumers, anarchists, movements like *Via Campesina*, popular organizations from countries in the global south) formed a "*movement of movements*" and blocked access to the summit (Notes From Nowhere, 2003). Consequently, the proposed Round of agreements was not approved.

Seattle was not the first time that the GJM had carried out this type of "counter summit" action, nor was it its biggest protest, but it was the first mobilization to receive mainstream media coverage. The mobilization was made possible by deploying tactically-diverse strategies working toward a common objective, solidarity, and the coordination of different creative expressions (D. Solnit, Interview, October, 2008; C. Carlsson, Interview, December, 2008).

The mobilizations in Prague against the International Monetary Fund and the World Bank, on 26 September 2000, confirmed the movement's breakthrough in Europe. With the mobilizations in Seattle and Prague and those that followed, the global consensus on neoliberal thought had been broken.

The GJM behind the social forums experienced a long formation period on the international scene (Seoane & Taddei, 2002). In 2000, the idea of organizing an encounter to extend the alliances of the GJM, build alternatives and advance the critique of neoliberalism, became a reality with the World Social Forum (WSF) (Leite, 2004; Sen, Anand, Escobar, & Waterman, 2004; Smith, 2004; Teivainen, 2002; Whitaker, 2004). The social forums process marks a space for debate and coordination, as well as for the forging of alliances within the GJM.

199 For a history of the GJM see Abramsky (2001) or della Porta, Andretta, Mosca, & Reiter (2005). For a history of the social forum process see Leite (2004, 2005), Euromovements (2006), Sen**,** Anand, Escobar, & Waterman (2004), Smith, Karides, Chase-Dunn, della Porta, Becker, Brunelle, Icaza, and Vazquez, (2007). For an extended bibliography on the GJM and the social forum see: http://www.ephemeraweb.org/journal/5-2/5-2biblio.htm

The initiative for organizing a social forum grew within French and Brazilian organizations. The first WSF brought together 20,000 participants from 117 different countries and Porto Alegre became the capital for the construction of alternatives to neoliberalism (Leite, 2005). After the first meeting of the WSF, a second global event was planned in 2002, and since then a WSF has taken place every one or two years, in several continents (Latin America, India and Africa). The form of the WSF has been experimented with, in 2006, for example, it was decentralized, taking place in different localities, with actions spread around the "centralized" world on an online map of action, and in 2007 three simultaneous WSF events on three different continents were organized.

Additionally, the possibility of holding regional level forums has been mooted since the first world, regional and continental social forums took place, such as the European Social Forum (ESF) or the Americas Social Forum (Reyes, Wainwright, Fuster Morell & Berlinguer, 2004).

In order to separate the decision-making moment from the forum itself an international network of social movements was created during the first WSF. Within this framework each forum approves a calendar for demonstrations. The larger mobilizations emerged within the framework of the assembly of social movements, for example, the call for demonstrations against the war on 15 February 2003, which resulted in mobilizations in 600 cities in 72 countries. Other large demonstrations that were promoted within the Assembly of the Social Movements were the protests in Genoa against the G8 summit, marked by much tension.

Information and communication technologies were important in the organization of a global level forum. In this regard, mailing lists and exhibition-oriented websites have been used since the first WSF in January 2001. Since then, several steps have been key in the decision to provide online participation platforms.

The first step towards the adoption of a multi-interactive online platform was taken in 2003. During the second ESF in Paris that year, an effort was made to construct a "memory" of the event to record the results of the different activities held in order to give basic answers to those who criticized the absence of final decisions at every social forum.[200] Since then, several platforms have been built to enable the construction of the social forum's "memory". The memory is also linked to the desire to systematize and democratize access to the information and knowledge generated by the social forum process, giving access to non-organizers.[201]

The second step was taken in 2005 when the decision was made to adopt more participative methodologies to build the program for the fifth WSF. The key points of the new methodology were centered around defining the role of the forum as space in which to merge, rather than to direct the movement. This translated into the absence of plenary sessions called by the organizers of the WSF and the facilitation of self-organized activities, amongst other things. It

200 Source Veronique Rioufol (with the collaboration of Nicolas Haeringer and Françoise Feugas). – Practical Proceedings for Documenting the ESF, 2003.

201 Source "Sharing our wealth: The memory bank of the ESFs. Preserving, indexing, accessing, valorizing all forms of memory." Document presented at the Stockholm EPA, September 2007; and, Memo Culture project – Video-interviews on memory, 2006.

also featured consultation rounds to define the program (Wainwright, 2005). In order to do this, online platforms were designed to collaborate in building the forum program.

Finally, for the organization of the "global day of action" on 26 January 2008 an online platform was developed: the WSF map of action. That year, instead of a classic WSF, a day of action was proposed which would allow all movements and organizations to organize, amongst other things, debates, demonstrations and symbolic actions. This decentralized action required coordination between movements and a way to visualize the actions. The online platform included a world map on which every coalition, movement or organization could register and visualize their own actions.

VIII. II. The provision of online platforms of participation by the social forums: what organizational form do the social forums as platform providers adopt?

The use of communication tools at the forums is subject to cultural and political constraints particular to the type of forum organization. The organizational form of the forum has been characterized as an open space (Aguiton & Cardon, 2008; Biccum, 2004; Smith, Karides, et al. 2007; Keraghel & Sen, 2005; Nunes, 2004; Patomäki & Teivainen, 2004; Wallerstein, 2005; Whitaker, 2004; WSF, 2001). Open spaces are characterized by a large public space designed around a broad mission (see the Charter of principles of the WSF), providing an open space for participation by anyone who agrees with the broad mission, transparency of decision-making, and the refusal to delegate power, and to concentrate participation, facilitating direct communication between members but also with those outside, creating a positive approach to the plurality of opinions and linguistic diversity (Aguiton & Cardon, 2008). The content and program are defined and “self-organized” by the participants themselves, the forum organizer’s role is simply to provide the infrastructure. The forum is made up of engaged participants, sometimes self-selected and sometimes filtered by a membership mechanism, and the providers do not represent the forum**.** In order to support the forum process, online participation platforms were adopted. The provision of the online platform seems to follow a similar logic to that of the offline platform; however, as will be presented in the following sections, online participation challenges some aspects of the conception of participation in the offline forums.

Several governance models have been developed during the social forums. For the organization of the second WSF, an International Committee was set up and a Charter of Principles drafted. The Charter of Principles included a broad set of principles, frameworks and boundaries for the forum. Any person or organization which agrees with it can join the social forum. The International Council (IC) is a membership organization, composed by a list of NGOs and social movements from around the world. Continental and regional forums also became part of the IC. Most of its members were decided following the first WSF, with the aim of obtaining a worldwide picture of the GJM. However, new organizations can apply to be part of the IC. The IC is

organized in working groups which are open to any individual or organizations who wish to join, not only IC members. The IC meets twice yearly and communicates through online tools.[202]

An alternative governance model was adopted for the organization of the first European Social Forum in 2002, was retained for the following forums (Euromovements, 2006).[203] Instead of a membership council, an open assembly was established to organize the ESF: anyone is welcome to join the European Preparatory Assembly (EPA), which meets every three months.

A third model was defined for the organization of the first and only USA Social Forum in 2007. Departing from a critical perspective on the exclusion of resource-poor organizations and a racial divide within the WSF, an intentional space, as opposed to the "open space" of the WSF, was defined for the organization of the United States Social Forum (USSF) (Juris, 2008b). Latino groups and black communities kept control over the organizational process in order to make sure there was no white middle class predominance (Smith, Juris, & Social Forum Research Collective, 2008; T. Bang Luu, Interview, August, 2008; M. Randazzo, Informal interview, July 10, 2008; M. Knodel, Interview, October 16, 2009; J. McClelland**,** Informal Interview, October 18, 2009).

A clear statement present throughout the social forums is that its participants are not represented by the organizers of the forums (Santos, 2005; Whitaker, 2004; WSF, 2001). None of the providers of the three models (the membership council, open assembly and intentional space) claim to represent the forums. Furthermore, the Charter of Principles of the WSF emphasizes that the forum is not a decision-making body and *"intends neither to be a body representing world civil society"* (article 5: Charter of Principles WSF). However, there is a tension between the interpretation and view of the forum and the character of the providers. There are sectors which claim that the forum has to take decisions (i.e., intervene in favor of election candidates etc.) and that the providers should have to take a "directing" role in the forum (Teivainen, 2003).[204]

In the three provision models of the forum platforms, working groups or commissions are created. These working groups are open. Independently of the form adopted (membership council for the WSF, open assembly for the ESF, or filtered space for the USA), the working groups are open and work by consensus decision-making, meaning that all members of the group must agree on each decision. The working groups address several issues (i.e., forum expansion; fund-raising; program, among others). One of the issues is technology, which is organized by the communication commission or web team. The term adopted for this group varies in each forum. In this chapter I will refer to it as the web team.

The web team is in charge of the provision of online platforms. But the web teams are not autonomous; they follow a mandate and depend on the funding resources of the general council or assembly. The members of the web team are dispersed around the world. They communicate

202 For each forum a local organized committee is set up (formed by organizations of the country that hosts the forum). The forum is organized in coordination between the local committee and the IC.

203 I have participated in the ESFs in Florence, Paris, London, Athens and Malmö.

204 Source ForumPedia. **–** Questionnaire on the collective evaluation on the Athens ESF: Concrete questions "Evaluation of the Workspace website" and "How ESF could be improved." Retrieved June 20, 2008 from http://www.euromovements.info/yearbook

through e-lists and wikis, and hold a weekly chat, with physical meetings during the IC or EPAs as well as during the forums.[205]

The social forums are resource-poor (Reyes, 2004), and therefore the web teams work with a very small budget to provide and maintain the tools.[206] Furthermore, the involvement of the working groups is organized on a voluntary basis. The web teams are generally amongst the largest working groups in each forum, although they work in a context of the scarcity and instability of voluntary and funding resources for the provision of online platforms (M. Ap Ceridwen, Interview, February 23, 2008; P. George, Interview, June 8, 2008; D. Moraira, Interview, June 9, 2008; M. Knodel, Interview, October 16, 2009*)*.

Additionally, although in formally participation in the web teams is open, the decision to engage in the forum organization is not taken completely freely. Looking at the actual participation in the web teams, EPAs and IC, there is no freedom to engage in them. For example, resource-poor sectors are excluded from participating in physical meetings (M. Casalucci, Interview, February 23, 2008; M. Ap Ceridwen, Interview, February 23, 2008; T. Bang Luu, Interview, August, 2008).

Finally, in terms of **open versus closed to community involvement in infrastructure governance**, the social forum follows a more open model. For the case of the social forums, the relationship between the providers and the community in the social forum case follows an assemblarian self-provision type. The providers are part of the community. There is no overlap between the forum and the providers (as in the case of Wikimedia), nor is there any sharp distinction between the providers and the community (as in the case of Flickr), but a more or less self-selected group of participants who engage in the organization of the forum, that is, participants in the community who take care of infrastructure provision.

Additionally, there is no involvement from openesf.net participants in forum maintenance, which is the reserve of the web team. The people who want to contribute to sustaining openesf.net concentrate their engagement in the web team. Furthermore, the providers are also participants in the platforms. The web team also intervenes in the community function. In fact, the members of the web team are generally the most active participants in terms of generating content in openesf.net. The web team communicates with the rest of the community during the EPAs and/or through the fse-esf about new features related to openesf.net.

In the case of the social forums there is no separation between the providers and the community. Furthermore, more than the “provision” of platforms (for others to use), in the case of the social forum there seems to be a sense of the “adoption” of platforms for self-use.

---

205 Sources Report from the website’s working group, presented as a proposal at the Stockholm EPA and approved by the final assembly, 15-17 September 2007, and Document on organizational principles of the US Social Forum 2010 Information and Communications Technology (ICT) Working Group. Retrieved May 10, 2010 from http://ict.ussf2010.org/wiki/technology_principles

206 Source Document “Web team budget and proposal of permanent funding.” Available at the Kiev EPA, June 2008.

Finally, although a part of the social forum takes care of infrastructure provision, this part does not represent the whole forum. The infrastructure providers do not represent the forum's platforms.

As previously stated, the social forum did not adopt online platforms immediately. Furthermore, several positions on the adoption of online platforms can be distinguished. In the following section I will present the debate on politics of technology around the adoption of open platforms through the specific case of the 2008 ESF.

VIII. III. The politics of technology and participation in the social forums: different approaches to provision of online platforms of participation

Research relating to the politics of technology at the social forums assumes that technology is inherently political (Caruso 2004; della Porta & Mosca, 2005; Juris, Caruso & Mosca, 2008; Kavada 2007a, 2007b, 2010; Mosca, Rucht, Teune, & Lopez, 2007). What appear on some occasions to be “technical” divergences concerning the use of technology are in fact clashes of political interest and/or opinions. In this regard, the goal of this research is to analyze how the technology adopted reflects the political goals of the forum. Furthermore, research on the politics of technology in the social forums is also characterized by its approach towards the social forums not as a monolithic actor, but the result of internal contentions and collaborations. Following this argument, the literature on the politics of technology in social forums views the forums as an expression of diversity. Conflicts around technology mirror conflicts over the nature of the forum itself, and the political strategy is to adopt the plurality of views expressed at the forums. In this regard, the richness of the social forums as a meeting point of multiple views that conform to an “ecology of diversity” is also reflected in the diverse approach concerning the adoption of NIT. In conclusion, in the Social forum different political visions associated with particular uses and an understanding of technology co-exist. The following section will pay attention in particular to the **politics of technology** at the 2008 ESF. Furthermore, the analysis will consider online platforms of multi-interactive participation, whereas previous research has mainly concentrated on the use of e-lists (Kavada 2007a, 2007b) or mainly information websites (della Porta & Mosca, 2005). Additionally, previous research has highlighted the limited use of multi-interactive web tools by SMOs, which may, according to this research, be explained by the lack of dissemination of these tools in the social movement society (Porta & Mosca, 2005; Sudulich, 2006). Instead, this research is developed in the context of the widespread dissemination of multi-interactive online tools following the explosion of the Web 2.0 in 2004.

In this section, an analysis of the politics of technology at the 2008 ESF will be presented, supported by extrapolations from the empirical data. In the first part, the contrast between the politics of technology at the 2004 ESF as compared to that of the 2008 ESF will be presented, thus describing how the ESF has changed over this four-year period. The comparison will be carried out

using Kavada's analysis of the politics of technology at the 2004 ESF. The second part will focus on the analysis of the politics of technology in the 2008 ESF, and particularly on the debates on the adoption of the openesf.net.open platform. It begins with an overview of the positions on technology within the ESF, then continues by presenting the two transversal tensions present over the adoption of online platforms: openness versus control, and individual versus organizational identity.

According to Kavada's analysis of the 2004 ESF, the politics of technology at the London ESF was characterized by a critical confrontation between two visions:

> *"Two camps' competing attitudes towards email lists and the web. Governed by opposing understandings of the politics and goals of the ESF – the 'Verticals' viewing it as an event that should be organized as efficiently as possible, the 'Horizontals' perceiving it as a process that should embody the democratic ideals of the movement – the two camps spawned two websites with very different characteristics. In that respect, the official ESF 2004 website, which was under the control of the verticals functioned mainly as a shop window whereas the esf2004.net website, created by the horizontals operated as a collaborative lab. The horizontals and the verticals also exhibited different attitudes towards email lists. While both sides praised their value for disseminating information, the horizontals were more appreciative of their use for collaboration, while the verticals feared that too much online deliberation may drain the energy for action. (...) the two sides were ultimately characterized by two different communicative logics: while the verticals were guided by a broadcasting logic, the horizontals" were more inclined towards dialogue"* (Kavada, 2007a, p, 1).

In contrast to the picture of the 2004 ESF presented by Kavada, the organization of the fifth ESF was characterized by two different aspects. First, in 2004 there was a strong confrontation between positions for and against the adoption of tools open to participation. According to Kavada's analysis, in 2004 only the "horizontals" were in favor of adopting open tools. In 2008, there is a general openness and/or curiosity in adopting platforms of open participation, not only as connected to a sector as in 2004 with the "horizontals". Furthermore, there are no longer positions or sectors against the adoption of platforms of open participation, as was the case in 2004. However, several positions can still be differentiated according to the protocols that guide the participation, mainly concerning the degree of openness and identity expected in the registration by the participants. There are also different sensibilities and awarenesses on potential risks.

Second, in 2008 there is a general agreement that having several websites is necessary in order to meet a diversity of needs, in contrast to the view recorded in 2004 that only one centralized website was necessary or desirable. (In 2004, there was only one official website.) However, the conflict between the "verticals" and the "horizontals" resulted in the creation of two websites: the official "shopping window" of the "verticals" that provided all the official information required by new participants to attend the ESF, and the alternative "communication lab" of the

"horizontals" (with an interactive dimension) which facilitated coordination between activists already involved in the organizing process and familiar with the forum. This allows Kavada to conclude that it *"would be a wise decision to link-up the two websites and devote each one to a different function"* (Kavada, 2007a, p. 15). This is indeed what happened in 2008, once the attitude that ESF needed only one centralized website no longer held weight. Instead, it was decided to adopt and combine three websites. Three websites were used for organizing the 2008 ESF, which took place in September 2008 in Malmö (Sweden): the first, the ESF process website (www.fse-esf.org), was the "process-led" permanent website of the ESF; the second, the ESF2008 event website (www.esf2008.org), was the ESF event site for the fifth ESF. The logic of communication between these two websites was to provide collectively agreed and "finalized" ("official") information (Kavada, 2007a, p. 18). Only certain authorized people, under the supervision of the webmaster, could access and change the content. In contrast, the third website, openesf.net (www.openesf.net) was set up as a collaborative working space and platform.[207] The logic of communication on openesf.net was to emphasize the collaborative creation of content and its dissemination in a lateral rather than a hierarchical way. This approach acknowledged the interactive features of the Internet and its potential for enlarging participation in the process (Kavada, 2007a, p. 19).

The decision to maintain three websites with one based on an open platform was not the result of a conflict, as in 2004, but of a desire to take advantage of the different capabilities of technology relative to different communications needs and audiences. In the words of Lennart Borgman, a Nordic technical activist: "*It is important to have an equilibrium between synthetic view (expositive management) and open dimension; both are important; making clear the conditions for passing from one stage to the other"* (L. Borgman, Interview, September,2007).

In this section, the politics of technology at the 2008 ESF will be analyzed, with a particular focus on the debates over the adoption of the openesf.net open platform. Firstly, it includes an overview of the positions surrounding technology at the ESF, before presenting the main transversal tensions that distinguish the positions.

From the participant observation and interviews with EPA participants, three positions concerned with the open platforms at the 2008 ESF emerged: the promotion and welcoming of open platforms; the awareness of risks; and disinterested parties.[208]

Several aspects have been mentioned concerning the first position promoting and welcoming open online platforms such as enlarging the possibility to participate in the organization of the ESF and to systematize and enable access to ESF outcomes and networking resources (C. Aguiton, Interview, December 13, 2007; M. Casalucci, Interview, February 23, 2008). Some of these aspects are connected to the discourse of "democratizing" the ESF. According to the interviewees who held this position, openesf.net is regarded as a democratic tool because it

207 Source Flyer: openesf.net. Available at the Berlin EPA, February 2008.
208 Source Notes from the discussion at the EPA after the openesf.net presentation. Istanbul, December 2007

provides the possibility of directly editing content (C. Aguiton, Interview, December 13, 2007; M. Berlinguer, Interview, December 13, 2007; M. Casalucci, Interview, February 23, 2008; A. Tria, Interview, February 23, 2008; P. Yulis, Interview, February 23, 2008; D. Moraira, Interview, September 16, 2007).

In the words of two Italian activists during an EPA:

> *"The democratic management of an open space website is the possibility for everybody to be able to intervene, modify the documents, be able to create spaces of work and connect with other people. (...) Then the democracy, the element that everybody feels free and do not have to fear that their own work will be lost"* (A. Tria, Interview, February 2008).
>
> *" A democratic thing needs to be based in something that everybody has access to. (...) Too often there is an intervention on the political content and on the real content and this [results] in political censorship and not in a democratic thing. For this for me the best thing is to be able to access all the pages and be able to write documents and participate in the work of the website."* (M. Casalucci, Interview, February 2008).

The interviewed frequently mentioned the importance of its usability and accessibility, as well as the translation of all of the functions and instructions into other languages, as being pro-democratic qualities (A. Tria, Interview, February 23, 2008; G. Faccetta, Interview, December 13, 2007).209

As presented by an Italian and a Greek promoter of the openesf.net:

> *"A web is a democratic tool when most of people that use the web have the knowledge and there is not a group of specialists that provide this web. They spread the knowledge to the users "* (P. Yulis, Interview, February 2008). *"I think it is very useful, simple and easy to use for people like me that is not expert to use tools and this is a way to democratize it*" (Giovanna Faccetta, Interview Istanbul, December 2007).

Finally, others emphasized the benefits of openesf.net in terms of increasing "efficiency" in the organization of the ESF (P. George, Interview, June 8, 2008; L. Borgman, Interview, September 16, 2007).

The second position concerning the open platforms was characterized by drawing attention to risks. This position was held by activists lacking knowledge of NIT and "online" phenomena, and

209 The concrete reasons for welcoming the openesf.net mentioned by the interviews were. First, to facilitate involvement in the organizational dimension for people who could not participate in the EPAs. Second, to contribute to the coordination of the ESF organizational process and the ESF networks; Third, to contribute to the networking facilitation contact data. Four, to contribute to an ESF process instead of only an ESF event; Firth, to localize the forum; Sixth, for the creation of a community around the ESF; and, finally, to democratize access to the website. The presentations of the above benefits of openesf.net were also accompanied by some problems that this openness could generate: Platform could host non-constructive behaviors (personal attacks or provocations) and risk of spam attacks. Spam attack are frequent in online open platforms and one of problems that require more time-consuming to maintain an online open platforms.

especially the differences between NIT and traditional mass media (TV, Radio, etc.). This position was also characterized by curiosity about the technology and a willingness to be open to the technological "*revolution*". But the fear of potential risks is also a common characteristic of those who maintain this position.

Among the potential risks highlighted are the generation of a virtual power that "expresses opinions", but is disconnected from the EPA and the "real" organizational work.

> *"The other question to take into consideration about telematic instruments is that sometimes the role of people that do not exist is enlarged; like people that do not do political activity or social activity but have a lot of time to be the Internet and appear everywhere so write, put documents, etc. that then take on an importance that does not correspond to the importance of the person or organization"* (P. Bernocchi, Interview, December 13, 2007).

According to Kavada's analysis, in 2004, this emphasis on 'doing' versus 'talking' was also a distinguishing feature of the 'vertical' identity and of how the "verticals" defined themselves in opposition to the 'Horizontals'. In this respect, the 'verticals' criticized the 'horizontals' continually for becoming involved in discussions about process instead of getting on with the practical work of organizing the ESF (Kavada, 2007, p. 16). *"This emphasis on efficient organizing, on 'doing' versus 'talking', further limited the 'verticals'' appreciation of the interactive features of new communication technologies. Interviewees from this camp were always stressing that the Internet is 'just a tool' and that real political action is located in the physical (face-to-face) world. Afraid that the movement would turn into a 'talking shop' rather than fulfill its role as a political actor, the 'verticals' were more apprehensive of the dialogical aspects of the Internet"* (Kavada, 2007a, p. 18).

Other potential risks mentioned were the use of the platform for personal propaganda and individual opinions, instead of transmitting collective messages in the spirit of collective action; giving too much space to individual approaches and viewpoints instead of to organizations/movements' viewpoints (F. Russo, Interview, June 8, 2008; P. Bernocchi, Interview, December 13, 2007). Another risks mentioned stated that if the openesf.net were used as a platform for posting opinions (in the line of blogs) that had not been collectively agreed upon, it could result in the loss of control over the political message the ESF would transmit to the mainstream media and the public at large (A. Theodorakopoulou, Interview, February 23, 2008; C. Ventura, Interview, December 13, 2007).

In the terms of a trade unionist at the EPA:

> *"Those who read the website are not in a position to distinguish what represents the common feeling and how blogs advocate a position that is not shared. And it is common that the blogs that put the more scandalous things are the ones that are more visited although they are not the most agreed-upon. If, for example, a journalist comes to an Assembly and sees that someone talks in favor of a political position in the European Elections and this proposal falls down, he sees it; but if this*

proposal is put onto a website that is shared everyday by the ESF, then the journalist can say that in the inside of the ESF there is support for a specific candidate to the European Elections and none can deny this because this blog is the same as any other blog, there is not a gradation between blogs that are important and not important. All the blogs are equal there are no dominant blogs. There is not equivalence between an assembly and an electronic tool. The electronic tool is more powerful and less controllable than an instrument of collective discussion that is more controllable" (P. Bernocchi, Interview, December 13, 2007).

Finally, interviewees were worried that openesf.net increased inequalities linked to the digital divide, because people who have access and time can dedicate more to online content, and to the increase in power of the web team, as wielding more control over the content of openesf.net (Notes on the intervention of a French activist at the EPA, December 13, 2007; P. Bernocchi, Interview, December 13, 2007).

The third and final position was held by representatives of trade unions, who allowed the project to proceed as they had no interest in the technology so long as their roles as representatives of organizations was not affected. . This attitude is exemplified by the response from an Italian CGIL trade unionist when he was asked to participate in a training session on the openesf.net. He declined the invitation, arguing, *"I have two secretaries that are very good at those things"* (CGIL trade unionist, Interview, February 23, 2008). Again, consider the member of the Rosa Luxembourg Foundation, who answered the question "What are the conditions for a website be a democratic tool?" by saying: *"I have not ever thought about this question"* (Member of the Rosa Luxembourg Foundation. Interview, February 23, 2008). In other words, they had little sense of the potential of NTIs (M. Eisenscher, Interview, August 2008).. ESF web team members thus had to raise among other EPA organizers awareness about the capabilities NIT could, in their view, offer, and its political nature. This attitude is problematic for the use of open platforms at social forums, because this sector is one of those with considerable influence on the funding resources of the ESF, and tends to underestimate or be reluctant to cover the costs of maintaining the ESF platforms (M. Berlinguer, Interview, December 13, 2007; M. Randazzo, Informal interview, July 10, 2008). This third position raised concerns about possible interference the online platform could create within the internal hierarchies of their organizations. In this line, a French trade unionist posed the question of whether it is a problem if someone from an organization talks in the name of the organization, but is not the official representative of that organization (P. Barge, Interview, December 2007).

The different positions regarding the online platform are a reflection of the variety of organizational and democratic logics. The social forums are formed by a large variety of groups. Social forums host and combine distinct organizational and democratic logics (della Porta, 2005b; Doerr, 2009). On the one hand, the centralized and hierarchical organizational logic and representational democratic logic of the left (political parties, trade unions, large NGOs), and, on

the other hand, the decentralized and network organizational logic and the participative democratic logic of small anarchist groups, “open space” advocates, and horizontal organizations with diverse ideologies (Juris, Caruso & Mosca, 2008).

In conclusion, in 2008, the ESF decided to adopt an open platform of online participation. However, this decision was taken in the context of a disagreement between three different perspectives on open platforms of online participation in the EPA. Additionally, as platform providers, social forums are in charge of designing the architecture of participation of the platforms. In the design of the architecture of participation, two main tensions and points of contention could be distinguished: One concerned the protocols of openness to participation, in terms of more open *versus* closed, control approaches, and the other concerned the design of the participation in terms of the profiles of the participants, distinguishing between individual *versus* organization approaches.

The tensions between ***openness versus control*** are based on several factors. First, there is the contrast in terms of the forum’s growth strategy with a further contrast between a linear accumulation through a closed formula versus openness to enlargement and change. There is a broader oppositional logic between two particular groups. First, there are those who wanted to maintain the actual distribution of power between existing forces and feared losing control over it and a growth strategy based on attracting more people via traditional interventions such as communications to the mass media and alliances with or increased influence over established politics. Second, we find those who were willing to re-direct the role of the ESF towards new politics based on participation, enlarging its bases through “horizontal” actors or new types of collective actors (such as online communities) and who assumed that conventional politics were in an irreversible crisis, therefore creating the need to experiment with new forms.

In the words of Rodrigo Nunes on the case of the 2004 ESF:

> *“‘The politico-organizational distinction between ‘horizontals’ and ‘verticals’ can be posed as the difference between a logic of connectivity and a logic of linear accumulation – on one side, the loose, shifting associations of small elements that combine to produce larger effects, which translates into non-hierarchical, networked structures that (tend to) see themselves as acting apart/outside of/against institutions such as the State; on the other, the search for general programmes that can bring together the largest number of people into a unified acting body, which tends to translate into hierarchical structures and (generally) into an understanding of the goal of political action as the taking control of, or at least influencing, existing institutions’”* (Nunes, 2005, p. 308).

Second, there was a contrast over control between those in favor of *communitarian control versus webmaster gate keeper control.* Openness does not assume a lack of control, but a communitarian model of control (M. Berlinguer, Interview, December 13, 2007). Communitarian control is a model based on online openness to content and decentralized social control over the

content thus generated. Instead the control model of the authorized gatekeeper is based on a central filtering of information by the webmaster. The information accepted results of an “offline” deliberation in the assembly or other sources of authority, like the organizational logistic information from the working groups. It assumes that deliberation is not hosted “online”.

Third is a clash over the priorities of political sectors on participation conditions and whether these should be offline *versus* online, or, the digital divide *versus* travel cost divide. The representatives of vertical organizations tend to be in favor of a gate keeper control model because it does not conflict with their roles as representatives. However, the distinction between the two control models does not neatly correspond with a “participative versus a non-participative approach”. It also has to do with “offline” participation versus “online” participation and the distribution of resources that each type of participation requires. Those organizations that can afford the travel cost of participating in EPAs are more disposed towards a model of “offline” deliberation and conceive of collective action only in its “offline” manifestation. Furthermore they do not have the technical knowledge to use online tools. Organizations whose bases hold resources of technological knowledge about online participation but scarce monetary resources are more favorable of a model that presupposes online participation. In this regard, researchers showed that asymmetric *material* and *immaterial* resources create unequal opportunities to access EPAs (Andretta & Doerr, 2007; Boéri and Hodkinson, 2004; Doerr, 2009; Haug, 2007; Kavada, 2007a).

Finally, there is a contrast between an open, collaborative, self-organized division of tasks *versus* a clear one and difficulty in integrating collaboration. This refers to a logic of collaborative administration and content building, as opposed to one of control over the organization of the content of the website based on a clear division of tasks under the figure of the webmaster (that is, a person who controls and maintains the web content). As Hilary Wainwright puts it: *"[t]he overly bureaucratic control of the website is symbolic of a wider problem of mistrust of the capacity of the self-organized new movements"* (Wainwright, 2004).

The second main tension present at the social forum is within the forums themselves, and concerns ***individual participation versus participation as organizations***. Some attempts were made to develop organizational structures that would allow individual subjectivities and contributions and multi-faceted belonging and participation. However, tension remains on the question of individual participation within the social forums.

One reason for is the rise of individuals as a challenge to the idea present in some parts of the social movements, *“that individualistic types of cultures tend to produce an ideology of success and a tendency for individual achievements. These views are reluctant to perceive positive effects in individualization in terms of commitment and political engagement”* (D. della Porta, Interview, 11 March 2008). Another reason is that individual participation reduces the arguments for the representatives of vertical organizations about the maintenance of representative mechanisms and control over their bases (P. Barge, Interview, December 2007; P. George, Interview, June 8, 2008).

As Marco Berlinguer put it *"(At the ESF there is) a culture too much linked to the traditional logics of organization (...) that assumes that the the communication must pass through the control of organizations, the fact that there are the individuals that directly communicate and do not pass through the filter of the representation of organizations are a factor interpreted as risk, disorder and chaos"* (M. Berlinguer, Interview, December 13, 2007).

A third reason is a lack of faith in the organizational capacity of a network model structure as opposed to a vertical and professional model (Wainwright, 2004).

Conversely there several types of arguments in favor of flexible and light protocols which allow, and to some degree support, individual participation. First, defending individual participation at openesf.net is part of the defense of individual participation at all levels in the ESF, as it is a type of participation that is present within the GJM. Second, individual participation is the form of participation most suitable for online interaction. *"It is what works on the Internet"* or a practical approach assuming that the dominant model of Internet culture is based on *"light"* protocols, and so openesf.net has to be similar in order to work (C. Aguiton, Interview, December 2008). Plus, interactivity needs to be agile and have the capacity to react, and individual reactions are faster. Finally, it is seen as a way to be open to connecting with the phenomenon of online communities, which is an example of commitment to individual participation (M. Berlinguer, Interview, December 13, 2007).

Additionally, previous researchers, such as Bennett, have pointed out that *"[t]he Internet happens to be a medium well suited for easily linking (and staying connected) with others in search for new collective actions that do not challenge individual identities. Hence global activist networks often become collectivities capable of directed action while respecting diverse identities"* (2003: 28). This works to generate a larger capability for tolerance towards individuals from different political traditions and cultures (della Porta & Mosca 2005, p. 179), facilitating 'the construction of new, flexible identities' (ibid: 186).

VIII. IV. Community organizational form: Participation and interaction dynamics at the platform

The previous section focused on the different approaches to the provision of participation platforms at the EPA and the tensions surrounding the online platforms, this section is dedicated to the dynamics of participation at the platform, and how the openesf.net community functioned. In other words, what was the result of the design of the architecture of participation? Did it generate participation and collaboration? And if so, of what type?

The analysis on the politics of technology was mainly based on interviews and participant observation during the EPAs; this section is instead based on a web analysis of participation data at the openesf.net.

The openesf.net has been online since November 2007. The analysis of the data of participation was carried out four months later, in March 2007. At that time, 220 participants were registered, they created 62 projects.[210] The analysis was carried out at a time when it was expected that platform participation would increase as the next ESF was due to take place the following September. However, three years later, in March 2010, the ESF ceased to make openesf.net available online. After three years and four months the openesf.net had around 1,000 registered participants.

Openesf.net is meant to serve as an online space for any activity/project or entity (organization, network group) working under the Charter of Principles of the WSF, and to support networking around the ESF process. It was free for visitors to register and they can automatically create space for a new project. 211

Previous attempts of the openesf.net at building a collaborative space were rigidly based on the participation of one type of participant, representatives of organizations belonging to only one organization, and requiring a reference "leader" for each organization. These protocols of participation were considered by some as one of the causes of the failure of the first attempts. In openesf.net, registering as a participant instead required only "light" and flexible conditions. The participant only needed to provide a name and an e-mail address (which remained private). Both individuals and organizations could therefore register.

However, if we look at the actual data of participation at openesf.net, the large majority of the accounts (97,19%) were registered with the name of an apparently real person. Although the discussions of the EPA concerning the reclaiming of space as an organized way of participating online, references to organizations were marginal. Only three accounts had the name and nickname of an organization instead of a person.

With regard to links, among the participants that did provide a website link, organizational websites were six times higher than links to personal websites. This suggests that the networking data provided at openesf.net was oriented towards organizational networking and not personal networking.

Among the participants that filled in the 'about' and 'interests' fields (which allowed more space for providing personal data), people tended to present themselves with a combination of personal and activist information. No user provided a presentation of him/herself based purely on personal information, and only some of the participants presented themselves in the 'about' field as members or representatives of an organization (especially activists linked to Attac and Trade Unionists).

---

210 The number of projects created was 62. However, 9 of these were created and deleted. The data collection was done for the 53 remaining online projects.

211 Each new project has access to the following functionalities: Wiki Pages for collaborative writing; Publish news in the project blog; Create and use mailing lists; Store and share files; Contact people and other projects hosted at the openesf.net; Own domain name. By default its pages and contents are public; however each project hosted in the openesf.net platform has the option to restrict its space only to its participants.

Lastly, participants tended to provide real information about themselves, which led to the conclusion that the participants felt they were in a non-fiction scenario.

The architecture of participation at openesf.net was based on participation distributed across thematic projects. The decentralization of participation into sub-projects is characteristic of all OCCs. Furthermore, at openesf.net the size of participation was limited to the project level. In other words, at openesf.net the decisions and mutual dependency among participants were limited to projects. No group could take decisions that would affect the rest of the projects hosted at openesf.net. In this regard, mutual dependency and collaboration among the participants was limited to the project level. In concordance with this, at openesf.net there were no community guidelines or policies that affected the entire population.

There were no supra-project dimensions, that is, spaces that went beyond the single project level. The relationships between the projects were based on the multiple belongings of participants to several projects, which helped to "bridge" and connect the projects.

The participants who wanted to engage in an overall dimension were concentrated within the web team. In this regard, participation was distributed amongst groups around common issues of interest, but there were no central spaces for the whole community. Participants engaged in projects, and then if they wanted to engage in openesf.net as a whole they became involved in the web team.

The lack of whole community spaces at openesf.net could be associated to the link between openesf.net and the social forums. The openesf.net dimension did not have a personality in itself, but was part of the ESF process. Some of the openesf.net participants subscribed to the fse-esf.net e-list and used this list as a space for communication at the supra-project level. But the fse-esf e-list is used to communicate with everyone interested in the ESF as a whole, not only openesf.net users. No supra-project or community level channels of communication existed at openesf.net. The openesf.net community identity did not exist and the participants did not develop an identity *as* openesf.net participants. Instead, they built their identity as ESF participants. In this regard, the link to the social forum affected the identity formation of the participants in this OCC. Della Porta considers that there are some OCCs that create their own collective online identity, and often the participants in those OCCs merge this identity with others (D. della Porta, Interview, March 11, 2008).

The offline dimension of the social forum also contributed to shaping the openesf.net community. The participants at openesf.net provided their real names. This was related to the fact that people already knew each other through the offline meetings of the ESF. Furthermore, half of the content on openesf.net was related to the offline dimension of the ESF. In this regard, half of the openesf.net projects were dedicated to groups and aspects related to EPAs, and the ESF as an event. In fact, according to my classification 54,7% of the openesf.net projects were EPA related. The other half were process-oriented, that is they were dedicated to international work on particular themes, or to local actions. Of these, the most common types did not specify territorial

dimensions or relationships with the EPA or ESF event (39,6%), but were dedicated to work on a particular theme. The number of projects associated to local activities was low (5,7%).

Concerning the composition of the project, 41,5% of the projects were composed of a single member, and the remaining 58,5% were composed of between 2 and 27 members. A total of 20,8% of the projects were composed by 3 members, and 11,3% of 2 members There are also several projects with 4 (5,7%), 6 (3,8%) and 8 (3,8%) members.

Concerning actual participation in the projects, a typology of the projects was developed. This typology considers two aspects, the orientation of the contents (i.e: informative *versus* open and collaborative) and the number of people who intervened (i.e, if content was generated by more than one person).

A typology of projects can be defined by referring to the type of content created and the type of interaction (frequencies of each type of project in parentheses):

Not used (37,7%): projects that were created but never actually used and contained no content. Even in the case of projects with several subscribed members, these projects were never used.

Link oriented (5,7%): projects that basically provided a link to another website without hosting any other content.

Group presentation (20,8%): these generally consisted of a wiki page that described a group. The contents were presented in a “exhibition” oriented form in order to promote the group. The space was not used to engage in collaboration. The presentation was provided by one participant or by interaction between more than one participant effort.

E-list oriented (1,9%): projects designated as only for the use of e-lists.

Wardrobe of documents (5,7%): projects used for archiving documents.

Working group – work in progress (20,8%): projects designed as working spaces. These projects invited the further development of their content and invited collective engagement. The contents of these projects were generally edited by more than one person. However, in those cases where all the content was edited by just one person, this person nevertheless updated with content that was the result of collaborative work between other members, such as the minutes of EPA working group meetings.

Blog (1,9%): generally only one person developed these spaces, and its contents were a sequence of the latest news or opinions.

Knowledge node (3,8%): The goal of these projects was to make a knowledge resource available.

The distribution of frequency of the type of use and participation in the projects shows that almost 40% of the projects were never used. After these, the most frequent type of projects were those used only to present an organization (22.6%) and host working groups (20,8%). These are followed, to a lesser degree, by link oriented or wardrobe oriented projects (5,7%).

In *sum*, these data suggest that the participants in openesf.net were not concentrated in a few projects but distributed across several projects. A significant number of projects were composed of only one person or by a few people. Interestingly, the logic of participation in the projects was fairly diverse. There was no standard framework for what to do and how to do it within the projects (as is the case at Wikipedia). Each project reflected and accommodated the several organizational and communicative logics present at the ESF. Some projects were exhibition-oriented while others were collaboratively-oriented.

In terms of the governance of the community, openesf.net was based on an approach of self-governance. However, due to the concentration of participation at the project level and the lack of overall community dynamics in the platform, there were no rules or roles assigned by the participants in the community. Instead, the rules and policies of interaction at the platform were defined by the web team during the EPA meetings, or through the regular online chat meetings.[212]

VIII. IV. Netenabler conditions: Freedom and autonomy of participants from the infrastructure provider

Openesf.net was based on netenabler *conditions,* that is major freedom and autonomy of participants with regard to the infrastructure. Openesf.net was built using FLOSS and the content of openesf.net was licensed under a Creative Common Share Alike License (unless a specific document specified another license). These conditions favored freedom and autonomy from the infrastructure allowing information flow and reuse. These conditions made it possible for participants to "leave" the infrastructure, migrate data and reproduce the platform, restarting the interaction somewhere else (an action known as "forking") if participants were not happy with openesf.net's provision. However, several aspects can be highlighted concerning the social forum's netenabler conditions in comparison with the other cases based on these conditions, that is Wikipedia and Wikihow.

First, in general, social forums do not have a "formal" organization of ownership. The use of legal frameworks is rare within the context of social forums. In this regard, although this was not the case for openesf.net, in the social forums it is common for the ownership of works to not be covered by licenses. However, this informal ownership of the social forums follows the same concept of knowledge as the other cases in terms of privileged access and reuse as well as its collective character. In contrast, Wikipedia and Wikihow have a more formalized approach to information and knowledge, promoting the use of a license for most of their activities.

Secondly, the netenabler conditions *theoretically* empowered the community in its relationship with the provider. In a case of assamblarian self-provision, netenabler conditions result in a limitation of the powers of the web team, by seizing control of platform provision for the rest of

212 The rules and policies of interaction at the platform were defined at the Guidelines of Moderation of the openesf.net content. Approved at the EPA Berlin, 22, 23 and 24 February 2008.

the participants in the ESF. In other words, if the web team did not act appropriately, or a group of ESF participants decided to separate from the ESF and create another space, they could take their data from openesf.net and re-start their activity somewhere else. This is also the case for Wikipedia and Wikihow.

However, the failure of the openesf.net exposed the limitations of the informal frame of netenabler conditions in terms of participants' autonomy from infrastructure provision. Openesf.net is based on netenabler conditions, yet at a certain point it was withdrawn because the server bill was not paid. Furthermore, openesf.net ceased to be available online without any previous announcement or notice to their users. As a consequence, participants could not copy their data from the platform and restart their activity somewhere else. Practically, participants lost their data. This caused major grievances among some of openesf.net's active participants. In this regard, the informality of the social forum did not create the conditions needed to request that responsibility be given to the provider. This case highlights the importance of the provision role, which is ultimately responsible for the data.

Finally, because these cases are self-governed communities based on netenabler conditions (which imply the content is collectively owned, and that they create digital commons. However, in the case of the social forums, the resulting digital commons, the social forum memory, is linked to the interests of the process that the platform is a part of. In Wikipedia and Wikihow, the resulting digital commons are of a broader interest. Additionally, due to its free license, openesf.net was freely available to anyone over the Internet, until it ceased to be online.

VIII. V. The power embedded in the social forum platform's infrastructure governance: distribution of functions, ownership and authority among the providers and the community

Concerning the distribution of functions among the providers and the community, the ESF's program, networking outcomes (i.e. the organization of calls for action resulting from the forum) and ESF memory are developed by the participants. The forum providers/organizers are in charge of providing the required infrastructure. In this section, this description refers to the openesf.net platform. However, it can also be extended to the whole infrastructure of the social forum event.

The providers are in charge of providing openesf.net's infrastructure and the technical maintenance of the platform. The web team is also in charge of supervising the use of openesf.net, in the sense that the content must follow the Charter of Principles of the WSF. However, this is only a formal assignation; in fact the web team did not take any action in this regard. Additionally, the web team promoted the adoption of openesf.net among ESF and EPA participants through general external communications. The openesf.net web team also acted as "user support," answering questions on how to use the tool, and providing training sessions during physical meetings.

Furthermore, the web team, together with the EPA, was in charge of fundraising to cover openesf.net's costs. However, the budget was very low and unstable. On some occasions activists themselves paid the website's costs from their own pockets.

Concerning authority, the web team did not intervene in disputes at the project level. In this regard, the web team was not at all involved in the projects. However, because there was no community dynamic beyond the project level; the overall governance of the community was concentrated in the web team. The web team was however open: so in principle whoever wished to intervene in the definition of the rules was able to.

Concerning ownership, in general ownership at the social forums is not complicated. For example, it is not defined who owns the logo, domains or technical infrastructure. However, it could be said that the trademarks and technical infrastructure are controlled by the providers, or even on some occasions by single people.

In conclusion, it is generally the case in the social forums, as for Wikipedia and Wikihow, that functions, authority and ownership go together. However, the case of the social forum, because it is difficult to establish a distinction between the provider and the community, it is better characterized by an approach of self-organization or co-government, than by an approach based on distribution and co-government.[213]

VIII. VI. How does the social forum's infrastructure governance shape the community?

The approach of the social forums is based on a collage type of collaboration with a commons-based; however online platforms remain relatively small, or ceased to exist during this research (such as the openesf.net). This resulted in an increase in interest if we consider that the social forums are able to generate very high levels of participation in their offline platforms. However, this does not translate into widespread online participation.

Several reasons connected to the infrastructure governance could contribute to explain the failure of the social forums to raise online participation and sustain the platforms over time.

The social forum's platforms favor community empowerment through openness to involvement in the infrastructure governance body and netenabler conditions, which are calculated to increase trust and the motivation to participate. However, self-provision requires a more offline basis because it requires a previous "we" to take charge of platform provision. The major offline base of the social forum process limits the transparent character of the platforms, constituting a trade off in terms of creating trust among participants who are not involved in the offline dimension of the forums. The informality of the administration, particularly in terms of formal policies and

213 However, the social forums have a performative approach to politics and take great care over methods of organization. In this regard, social forums have a strong normative method-oriented approach to self-organization. However the "informality" in the sense of a lack of defined and elaborated norms and rules regarding how things should be organized and the sense of provision is also characteristic of the forums, which could ultimately result in a "loose organization".

administrative transparency, could further reduce the interest of those unfamiliar with the social forums to use and adopt the tools.

Additionally, the open character of the social forum favors the capacity to generate voluntary resources for infrastructure provision and better knowledge on how to suit community needs. However, its informal character does not bond well with fulfilling provider functions such as the technical maintenance of the server. Furthermore, social forums met with difficulties in raising the required technical skills to maintain the platforms. This could be explained by the lack of strong connections between the Free software movement and the social forums process. The migration of technical people linked to the GJM to work in corporations has reduced the resources available to provide technology under non-profit principles (E. Rabble, Interview, August 28, 2009). In other words, social forums as online platform providers have a limited capacity to technically maintain and manage the platforms. Additionally, the sustainable strategy of the social forum, based on minimizing monetary resources, cannot guarantee the continuity of platform provision.[214]

There are other reasons connected to the provider's goals for the platform and their population target. The goal of the social forum platform is to support a social mobilization process. However, social movements have a cyclical dimension which can decrease their capability to sustain permanent spaces online. Furthermore, the type of agenda promoted by social forums is often connected to an event-moment, which makes permanent "interest" in OCC contents after the event, or mobilization, more difficult to sustain over time. The difficulties in transmitting the memory and lessons on the organizing of one event to the next is also a reason mentioned to explain the limit in the use of open platforms by the social forums (C. Aguiton, Interview, December 13, 2007; M. Berlinguer, Interview, December 13, 2007; M. Casalucci, Interview, February 23, 2008; A. Tria, Interview, February 23, 2008). Additionally, potential target participants of an OCC promoted by the social forums are those who share only to certain degree the forum's ideology. However, in 2008 the visibility and attraction of the social forum and the GJM was in crisis. The minor visibility of the forums may have reduced the attraction of its online spaces. Finally, there are other set of reasons explaining why social forums failled to create sustained OCCs which are connected to internal resistance to these forms of collective action. Some sectors of the social forum process are reluctant to use technology that could be a source of inequality in participation due to the digital divide. Additionally, there is a tension in the social forums with regard to how to organize participation in the online platforms. Some sectors are in favor of designing online participation according to representative logics (i.e., the requirement to register as an organization) while other sectors are in favor of adopting an individual basis for participation, meaning that participants can take part as individuals rather than as representatives of organizations .[215]

---

214 Furthermore, the lack of knowledge and/or interest among the social forum's leadership on OCCs results in a lack of political commitment to the promotion and sustainability of platforms. Some reasons for this lack of knowledge and/or interest are: generation gaps, fear of losing control over the social forums, adopting channels that the leadership do not know, and questions related to political strategy.

215 Political actors adapt technology to their styles and organizational strategies. However, they also have to negotiate and adapt to the "hegemonic" culture when using a technology predominant in society. In

VIII. VII. Conclusions: the social forum's provision of online and offline platforms of participation and the self-provision model

Like the other case studies, the platforms of participation promoted by the social forums are characterized by a very broad mission (Charter of Principles of the WSF); openness to participation to anyone who agrees with the broad mission; content and programs defined and "self-organized" by participants; and the decentralization of participation into projects among others. Interestingly, it is the forum organizers' role to provide the infrastructure, but not to represent the forum community. All of these characteristics are also present in other cases (such as Wikipedia, Wikihow and Flickr); however the forums as providers of participation platforms are distinctive in the sense that the social forum as a platform provider follows a self-provision, self-organization or adoption model, because the forum is not provided by an external body, but by participants engaged in the forum (in some cases self-selected and in others filtered by a representational process and/or intentional selection). At the social forums, there is no clear separation between providers and participants, and there are similarities between their organizational forms.

However, the social forum can be characterized as an hybrid form with regard to its composition. The hybrid form refers to combinations of several organizational forms. The social forums are hybrid forms in their composition because they host the "old" traditional Left (political parties, trade unions, large NGOs), and the "new" - small anarchist groups, "open space" advocates, and horizontal organizations with diverse ideologies. The diversity of organizational and representational logics the forums host results in tensions concerning the adoption of online platforms of participation around two main axes: individual versus organizational participation and open and versus closed control.

In the self-provision approach characteristic of the forum, there is no clear distinction between platform providers and platform participants. In this regard, the above mentioned tensions are not stressed in the relationship between the platform provider and platform participants. In the cases of Wikipedia, Wikihow and Flickr, where there is a clear cut difference between providers and participants and these follow different organizational forms, these tensions are played out in the relationship between platform providers and platform "users" or participants.

It is worth dedicating some attention to the similarities of the social forum as providers of online *versus* offline platforms. The provision of the online platform in some ways follows a similar logic to the provision of the one of offline platform: i) Both online and offline, the provider and the platform are based on an open and networked approach; ii) both are composed of a diversity of

---

this regard, it seems there are some mismatches between the "hegemonic" Internet culture and the GJM culture. The "hegemonic" Internet culture is grounded in the USA, while the social forums process is more Latin-American and European based. Finally, while the hegemonic culture of the Internet and the physical relationship with the Internet (a person in front of a computer or mobile) fits better with individualistic participation, participation on an individual basis is not allowed in all sectors of the social forum process.

forms; iii) and in both cases it is difficult to establish a separation between the provider and the platform.

However, the provision of an online platform was not an immediate act, a number of steps led up to the decision to provide online platforms of participation. To me, this is a sign of the challenges that online platforms constitute for the forum conception of participation. The online platforms generated two challenges to the conception of participation present within the forums: an increase in individual participation as opposed to organizational participation; and a fragmentation and decentralization of participation precluded the possibility of centralizing control and capturing the forum's collective dimension and intention. Both challenges were already present in the forums, yet the online platforms emphasized them. These tensions around the individualization and fragmentation of participation, together with the impact on the offline dimension of the forums from participation in the online, offer explanations for the time required for the social forum to adopt online platforms, and the small dimension and short duration of the online communities they promoted.

Chapter IX

The commercial infrastructure provision: Corporation service and mission enterprise. The Flickr and Wikihow case studies

The entrepreneur culture and the business ideals of raising money through innovation with the NTI informational products have been around since the early stages of NTI development which resulted in a technological industry (Castells, 2001, 2002). In the 1970s, the business was based on the creation of proprietary software for running hardware (such as the personal computer); once the Internet became a densely used network, business came to be based on providing online Internet service provision online.

In the fall of 2001, the technological industry suffered of what was called the “dot-com” crisis, which marked a turning point for the sector and a shift in the business model. The new economy of information access and sharing, also known as Web 2.0 or Wikinomics, refers to a shift in the business model, “a new way of doing business”, following the dot-com crisis (O'Reilly, 2005; Tapscott & Williams, 2007).[216] The new economy of information access and sharing is an innovative economic trend based on the commercialization of information flow and services by media corporations. The corporations are public companies for sale to the public through the stock exchange. Some of the platforms they host bring together very large communities of participants and have a monopoly in the market (in reference to covering large percentages, such as more than the 50%, of their market) (Tapscot & Williams, 2007).

An archetypal example of this new economy is Google. Google is the provider of a search engine and video-sharing platform YouTube. Google has from 75 to 90 % of the online search market (Vaidhyanathan, 2009). Google Images, and the new economy in general, were built as an “alternative” to previous approaches to NTI as symbolized by Microsoft. While Microsoft sells programs, as “packaged” information, Google is instead based on providing "free" services and channels for information flow and accessibility (Tapscott & Williams, 2007). It is worth mentioning that the these corporations have an activist discourse. The slogan "*change the world making a lot of money*" illustrates their position in this regard.[217] Apart from Google, other examples of corporations on the Web are Facebook (a social networking platform), Twitter (a micro-blogging

216 O'Reilly created the term Web 2.0 originally to represent a shift in the business model, “a new way of doing business”, after the dot-com crisis. However, the description of Web 2.0 by O’Reilly largely only outlines the design patterns of a Web 2.0 (2005). Instead, the concept of Wikinomics proposed by Tapscott and Willians is more specific about how corporations generate benefits from values created by the OCCs (2007). O’Reilly’s attention to design patterns instead of describing the mechanism for creating profit could be the reason why the term Web 2.0 is also used to refer to not for profit communities. Actually the term Web 2.0. is frequently used to refer to any mechanism that promotes participation and interaction among participants or that is based on creating links and network effects through the Internet. Other terms suggested by Levitt and Dubner is Freakonomics (2005).

217 Slogan present at the flyer found at Stanford University Career Fair (2008).

platform), Amazon (a bookshop), Ebay (an online auction platform), and Yahoo! (the provider of the photo-sharing platform Flickr).

The success of the new economy has disseminated (beyond the passionate *geek* and first enthusiast of the web) the open to participation multi-interactive channels of participating to the wider population.[218] The year 2006, was declared by the Times as the year of "you", referring to the spectacular increase in the use of platforms generated by participants creating their own content (Grossman, 2006).

Although, the new economy was founded on providing platforms for the flow of information through unrestrictive information exchange, most corporations base their platforms on a blackbox policy. That is, platforms are based on proprietary software and proprietary licenses on the platforms content.

Although most of the literature focuses on corporations, these are not the only commercial providers. There is another set of commercial providers, enterprises, which are based on a *mission-oriented* and *netenabler doctrine*. Mission enterprises are distinct from corporations in aiming to preserve the free net philosophy. In this regard, they are based on the netenabler policy instead of the blackbox policy of corporations. As Stallman had already noted in the 1980s, this different policy has a profound political meaning, as blackbox conditions limit the freedom of speech and of association (Stallman, 1996; R. Stallman, Interview, Juny 12, 2007). This new willingness to show that it is possible to create profit and sustainability under netenabler conditions can be observed in the discourse of the mission enterprises: frequently, successful start ups are bought by large media corporations. However, mission enterprises tend to remain independent from corporations and do not "sell" the platforms to them. Examples of this trend are cooperatives such as FLOSS and also Wikihow and Wikitravel.

Some of the channels of the commercial providers for making profits are personalized publicity, payment for sophisticated aspects of the service, publication of contents generated on the platforms or the selling of participants' profiles as social profile data. The distinction between these two models importantly lies in their different approaches to the net and participant's freedom and autonomy towards the infrastructure mission enterprises is a convinced enable net and flow continuity (portability) and blackbox corporations are closed points of flow.

Each platform does not act in isolation: the collaboration and flow of data between them creates a network effect. Both in the case of the corporate model as well as in the case of mission enterprises, networks are created between these two types of commercial form. In this regard, both in the corporation service and in the mission enterprises there are "clusters" or "net districts" (similar to an Industrial district) of platforms which cooperate to different degrees and share connections. While corporations create "close" agreements between corporate services, net-enablers create open networks for data flow between them and beyond. For example, in relation to

218 Geek is a legitimate term within Internet culture which refers to a person who is an expert on or /and passionate or obsessed with NTI.

the corporate model, there is an integration of services among participants' accounts, such as amongst Google, Facebook, Skype and Twitter. With regard to the mission enterprises, the provider's part of a "net district" is inspiring and advising each other and building upon others' learning experiences: they try not to damage each others' interests with their decisions and find places in the market for each of them; they share licenses in order to facilitate the flow of content between the platforms and the sharing of information; they use shared protocol to simplify participant registration in the different sites; they collaborate in terms of sharing "human resources" to fill available positions with active contributions from other platforms; and they participate in the same networking events.219 This is the case for example with Wikihow, Wikitravel and Wikia. Furthermore, these "wiki net districts" work within the parameters of Wikipedia. For example, these cases are among the main donors to Wikipedia.

It is worth noting that most of the providers of platforms of participation, both blackbox corporations and netenabler enterprises, are based in the USA. The San Francisco Bay Area, or more specifically Silicon Valley, is the "Mecca" of the new economy of information flows, hosting a high proportion of for-profit providers.[220] There are several reasons that explain this high concentration of providers within the USA, such as legal adequacy (i.e., liability of content), economic incentives (i.e. contact with venture capital) and the circulation of know-how (J. Wales, Interview, December 19, 2008; M. Godwin, Interviews, December 15, 2008; J. Herrick, Interview, December 4, 2008; K. Wadhwa, Interview, December 16, 2008). Importantly, the USA's ideology and models of profit frame these types of providers. In Europe and Latin America, there are also commercial providers, particularly FLOSS cooperatives. However, in these regions the emphasis is on more socially oriented business forms, perhaps inspired by larger cooperative developments in Europe and Latino America than in USA.

A critical discourse upon and analysis of commercial providers has been developed as they have grown in importance (Boltanski & Chiapello, 2005; Formenti, 2008; Fuchs, 2008; Moulier-Boutang, 2007a). From these critical perspectives the Web 2.0 contributes to the concentration of wealth as participants' activities have a tangible value for the providers. The Web 2.0 is based on procedures that, although requiring the intervention of large numbers of people, result in economic profits of the corporation. In the view of Moulier-Boutang, it is part of a "shift to a third capitalism, what we call cognitive capitalism relying upon capture of positive externalities more and more produced, located, and acting outside the historical boundaries of the firm, for continuous innovation and production of different publics (audience) more than market of commodities" (Moulier-Boutang, 2007b, p.1). According to Chiapello and Boltanski, Web 2.0 refers to the new spirit of capitalism. In their view, from the middle of the 1970s onwards, capitalism abandoned the hierarchical Fordist model and developed a new, post-industrial, network-based form of

219 Networking events in Mission enterprises are such as Recent Changes Camp or Wikimania.
220 New York City and Boston are also important bases of for profit providers.

organization (2005). However, whether Web 2.0 will develop as the predominant new business model or remain marginal is still uncertain (Moulier-Boutang, 2007a).

The growing trend of commercial platform providers hosting digital sociability further complicates traditional divisions between work, production, consumption, and play (Gregg, 2009; Trebor, 2008). There are several issues and controversies within the public arena surrounding the profit cases that are linked to those changes (Fuchs, 2008; Jarrett, 2008; Van Dijck & Nieborg, 2009).

One controversy raging over OCCs, and fundamentally over commercial platform providers, concerns the consequences on professional work. For example, Flickr is changing the relationship between amateur and professional photography and destabilizing the photography market. The availability of photos on the platform reduces the need for hiring photographers to take photos and so creates artist unemployment, while increasing Yahoo!s' commercial profits (G. Lovink, e-mail communication, March 2010). However, according to other authors, Flickr not only reduces the market for commissioned photos for professional photographers, it also contributes to increasing the market for photos taken by by amateur or "domestic" photographers (MacDonald, 2009).

Another question related to the role of the commercial providers of OCCs is the use of voluntary contributions to benefit commercial companies. This represents a grey area. According to Moulier-Boutang, it questions the crisis of the wage system of employment (2009). While some authors have characterized it as *free labor* (Terranova, 2000, 2004), several authors argue that commercial platforms constitute a source of exploitation by the companies of volunteer work or *free work,* because the corporation benefits from the value generated by collective interaction (Petersen, 2008; Terranova, 2000; Rossiter, 2006). An even more salient characteristic of the corporations is the gap between the very small number of employees and the massive number of volunteer participants involved. For example, Flickr's working team has 48 employees while the platform involves millions of participants.

Furthermore, there are permeable boundaries between active and engaged community members and employees of the companies. On some occasions, community members and employees behave very similarly. Furthermore, it is not clear whether the use of voluntary work by profit companies could be considered illegal (B, Johnson, Interview, December 9, 2008). Legally it is unclear whether a volunteer can carry out a prescribed set of tasks in a prescribed timeframe for a commercial organization. In the USA, there was a large lawsuit in the late 1990s against AOL, the first corporation to use voluntary work, which established that AOL was substituting workers' positions with volunteer positions. Since then, corporations approach voluntary roles with caution to avoid lawsuits.[221]

221 AOL used volunteers to monitor chat rooms, message boards, and libraries. Some were also recruited for tasks which were mainly performed by internal employees. In 1999, a class action lawsuit was filed against AOL citing violations of U.S. labor laws in its usage of volunteers. The Department of Labor investigated but came to no conclusions, and closed their investigation. However, in light of these events, AOL began drastically reducing the responsibilities of volunteers and offered them compensation. For more information see the entrance of AOL at Wikipedia (AOL, 2010). In an interview with Bill Johnson from the

All in all, the use of volunteers in commercial platforms opens up legal and ethical questions. Indeed some theorist argue against the use of commercial platforms (Lovink & Rossiter, 2007). While other authors claim that community members should be compensated (Weigend, 2008).

Most of the previous literature, both managerial studies on business models shift (Levitt & Dubner, 2005; O'Reilly, 2005; Tapscott & Williams, 2007) and the critical approaches to capitalism innovation (Boltanski & Chiapello, 2005; Formenti, 2008; Fuchs, 2008; Gregg, 2009; Jarrett, 2008; Lovink & Rossiter, 2007; Moulier-Boutang, 2007a; Petersen, 2008; Rossiter, 2006; Terranova, 2000; Trebor, 2008; Vaidhyanathan, 2009; Van Dijck & Nieborg, 2009), has concentrated on the analysis of the corporation. Contrary to previous research on commercial providers, the analysis in this chapter will also integrate the cases of OCCs based on mission enterprise providers. Although the mission enterprise model is less visible, it is also part of the OCCs population. Furthermore, the empirical analysis will be focused on how the relationship between the provider and the community is framed; which are the different conditions in terms of provider versus community empowerment; and how each of the models differently shape the communities. Examining how the provision model shapes the community constitutes an original feature of the literature.

In order to empirically analyst the two types of profit providers of platform provision, this chapter presents a case comparison of two case studies. Firstly, Flickr based on the corporate service model and secondly Wikihow based on the mission enterprise model. On the one hand, this analysis will allow for an in depth understanding of the closedness to involvement of the community into the infrastructure governance. As legally profitable entities, these providers are subject to the legal constraints which shape their role as provider and limit the possibilities of “openness” to participants’ involvement in the infrastructure governance. In their closedness to community involvement, there is some commonality between the cases. However, as the analysis will highlight, there are also some differences which will be addressed in the chapter.

Conversely, the analysis sheds light on the difference between the corporate service model and the mission enterprise model in terms of the approach to net principles and the level of freedom and autonomy from infrastructure. While Flickr is based on a blackbox policy, which infers that participant interaction is "trapped" and information cannot flow beyond the infrastructure, Wikihow is based on the netenabler policy, which infers that participants are individually and collectively free and autonomous from the infrastructure provider.

Online community report, he questions: *“How much has AOL saved by using volunteer labor during the past nine years? That’s not an easy question, and with AOL involved in litigation, the company is not eager to furnish the answer. But even with the most conservative numbers available, we estimate that by using volunteers AOL escaped nearly $973 million in expenses since going public in 1992. That poses the question: Would AOL have thrived-or even survived-on Wall Street without free help from volunteers during its first seven years as a public company? Not likely”* (B.Johnson, Interview, 9 December 2008).

IX. I. Flickr: Corporation model

The corporate model is illustrated with the case of Yahoo! as the provider of Flickr. Flickr is one of the first and most successful examples of the new economy of information access and sharing.222 The following section presents the function and organizational form of Flickrs' provision, together with the dynamics of interaction of the community around the platform. Secondly, the closedness of Flickr and the blackbox conditions of the infrastructure governance will be analyzed in detail, along with with how these governance characteristics shape the Flickr community.

IX. I.I The provision of platforms of participation: How does the mission enterprise function?

Flickr started out as a virtual game and evolved into a photo-sharing resource (C. Fake, Interview by Torrone (2004), December 3, 2004). In 2010, Flickr is a platform for sharing and archiving visual materials. Flickr users can upload photos, create groups of photos based on common interests (such as pictures of events, different photo techniques, and other topics) and can collaborate on the classification of photos or folksonomy.[223]

In terms of infrastructure provision, there are two main paths leading to the corporate model. On some occasions a start-up creates a platform, the platform become so successful that the start-up becomes a corporation in itself. As was the case with Facebook and Twitter. In other cases, the platform providers begin as a start-up enterprise which is funded by venture capital. When the platform gains some success, large corporations buy the start-up enterprises and the successful platform. After the corporation buys the start-up and its platform, the start-up company's staff runs the platforms, and the platform maintains its own brand identity. An example of this development path is YouTube. YouTube is a video-sharing platform launched in 2005 by a small start-up which achieved almost instant success; the year after Google bought YouTube.[224] Another example of this is Flickr.

Flickr was developed by Ludicorp, a Vancouver-based enterprises that launched Flickr in February 2004. In March 2005, Yahoo! acquired Ludicorp and Flickr (Koman, 2005).225 Yahoo! is a Nord American public corporation founded in 1995 and headquartered in Sunnyvale, California (in Silicon Valley), that provides Internet services worldwide. In 2010, Flickr is the 32rd most visited

222 Source Alexa.com ranking. Retrieved May 15, 2010 from http://www.alexa.com
223 Source Flickr About page. Retrieved May 10, 2010 from http://www.flickr.com/about/
224 Source Wikipedia entrance on YouTube (YouTube, 2010).
225 When Yahoo! acquired Ludicorp, Flickr had 27 million participants and 4 million photos (Koman, 2005).

website in the world.[226] As of December 2009, it claims to host more than 4 billion images.[227] Since then, the Flickr team work as a relatively independent team in charge of Flickr inside Yahoo!.

In December 2009, the Flickr team inside Yahoo! was composed of 48 employees.[228] There is an official hierarchical organigrama, but an internal participative approach in team organization. Furthermore, the culture of work around technology, present in corporations as heritage of the hackers tradition and the 1960s critique to the Fordist work culture, is characterized by highlighting the principles of joy, fun and youth (Boltanski & Chiapello, 2005; Turner, 2009). In these regards, the Flickr office has a workplace which is similar to a playground, and in order to facilitate creative work, the workers are relatively free to structure their own tasks (Himanen, 2001).

Finally, Flickr's business model is based on free account services for basic participants and paid subscribers ("pro" accounts") for unlimited use and special services[229]. Other sources of revenue in Flickr are some advertising and partnerships with third parties to sell data generated in the platform.

IX. I. II Community organizational form: Interaction dynamics

Flickr is based on openness to participation. Any person can register and freely use the platform, although, some of the functions are paid services. Flickr community is mainly composed of professional photographers (who use the platform as a tool for their work), amateur photographers (who develop their passion for photography and learn with the support of other Flickr participants), bloggers (who link photos to their blogs for citizens' journalism) and private "domestic" participants (who host and share photos of daily life with others) (MacDonald, 2009). Cultural institutions with historical or artistic public photographic archives also use Flickr to enlarge the audiences for their materials. In this regard, what characterizes Flickr is the way it encompasses the diverse forms of photography, blurring to some degree the distinction between them: from private to public; from amateur to professional; from documentation to art.

Flickr is based on individual sharing or the album type of collaboration. The settings are fundamentally individual. Each participant constructs his or her own pathways through the platform. A participant can simply observe pictures or can upload pictures in order to exhibit and share photos. Participants can converse and interact through each other's photos. A typical way of actively participating consists of browsing through contacts. For example, you visit the photographs of others, comment on them or tag them, and in return others also comment on your photographs (Cox, 2008). Participants also interact by creating groups around common interests, such as groups of pictures of demonstrations, cats or pictures following a particular photographic

226 Source Alexa web classification. Retrieved May 15, 2010 from http://www.alexa.com
227 Source Flickr blog. Retrieved May 15, 2010 from http://blog.flickr.net/en/2009/10/12/4000000000/
228 Source Fickr about page Retrieved May 15, 2010 from http://www.flickr.com/about/
229 Although using Flickr is not entirely "free". The user needs a device or devices to take photographs, a computer or mobile phone, photo software and Internet access to connect to Flickr, preferably by broadband, given the size of image files.

technique. By 2007 there were 300,000 groups (Sieberg, 2007). Participants classify the photos at Flickr following a folksonymy principle. Participants put tags in the photos they see. As participants can add tags, sets, titles and comments to photos then (though search engines) these photos become more easily searchable. The decentralized tagging classification and the search engine comprise the basic meta-data mechanism which puts all of the materials together and links individual actions.

Additionally, each participant decides the conditions of access and reuse of the photos he or she can upload. Flickr provides both private and public image storage and each participant decides which they prefer for the photos they post on Flickr. A total of 80% of photos on Flickr are shared publicly, forming a large collaborative database of categorized photos generated by the participants (Schofield, 2005; Torrone, 2004).230 Each participant also holds and chooses the license for the photos he or she uploaded. Some participants choose the creative commons license, which creates less restrictive conditions for others to reuse the photos. However, not all the participants choose the same license.

Additionally, several public and private museums which hold the world's most prized photographic archives have built a partnership with Flickr in order to make their image collections accessible.[231] This is called the *Flickr commons*. The goal of these partnerships is, on the one hand, to facilitate access to these resources in the public domain, and, on the other hand, to enrich these collections through the decentralization of Flickr participants.232 In other words, through using the collections, participants develop meta-data that helps to organize and classify the material. The slogan, which synthesizes the goal of the Flickr commons project reads **"***Your opportunity to contribute to describing the world's public photo collections"*.

Ultimately, there is no common goal beyond each participant's interest in exhibiting and sharing photos, interacting with others, and classifying and commenting on photos. The resulting visual archive is the product of the synergy between each individual's use of the platform, and not due to an explicit goal. In other words, the digital archive forms secondary outcome, not an intended one (E. Rabble, Interview, August 28, 2009). This interaction involves a very large community of participants, of which more than 50 million have registered accounts.233

Additionally, there is no governance of the community by the community and the order is almost completely defined by the protocols of participation in the platform design. Yahoo! establishes the rules of and how to interact at the platform. Yahoo! is also in charge of making participants respect those rules, with the power to block or remove material uploaded by

230 Source Fastcompany.com "Reinventing a Category Whose Flashbulb Burnt Out. Retrieved May 15, 2010 from http://www.fastcompany.com/fast50_05/profile/index.html?stewart_butterfield7_18

231 Participants include George Eastman House, the Library of Congress, the Brooklyn Museum, National Archive, the National Archives and Records Administration, the State Library of New South Wales, and the Smithsonian Institute.

232 Source Flickr The commons web page. Retrieved May 15, 2010 from http://www.flickr.com/commons

233 Source Flickr blog Retrieved May 15, 2010 from http://www.flickr.com/help/forum/en-us/100485/page6/#reply672723

participants if it does not fit with Yahoo!s' policy (E. Rabble, Interview, August 28, 2009; M. Alpern, Presentation at Wikimania and informal interview, August 28, 2009).

In conclusion, participants' actions are limited to individual paths of photo-sharing and collaborative classification, whilst commenting on and the governance over the interaction is in the hands of Yahoo!.

IX. I. III Flickr closedness to community involvement in infrastructure governance

In the first year of Flickr's platform design and development, the Flickr provider relied heavily on fairly intense interaction with the original participant base **(**M. Alpern, Presentation at Wikimania and informal interview, August 28, 2009)**.** In this first stage, the Flickr provider collaborated and enabled participants to construct, manage and have control over their interaction at the platform, and in the infrastructure governance in terms of platform design (Garrett, 2005). By 2006 however, the platform design became fairly stable and participant involvement was restricted**.** With the stabilization of the platform design, the participants' active involvement in platform design and self-governance altered with participants as individual "consumers" of a service as part of an increasingly commercial relationship in which participants' experiences are centered on their own photos and not intervening in designing the overall platform. In other words, Flickr's infrastructure governance evolved from an early stage of participative platform design and interaction in self-governance to commercialization in which participants do not intervene in the overall platform, but only use it (Cox, 2008)**.**

In terms of the **structural points of relationships**, the relationship between Flickr and the community of participants is based on closedness to participants' involvement, the corporation providing a service that the participants use. The community does not contribute on infrastructure provision matters, nor is there any overlapping or collaboration with Flickr.[234] In Flickr's words: "*Flickr works on getting things up and serving you*".[235]

Two main points of contact and communication can be discerned between Yahoo! as provider and the participants: the Flickr team as broker and the community manager as contact point .

When Yahoo! bought Flickr, it "absorbed" both the platform and the team in charge of it. Flickr's team maintains the platform, but importantly, it acts as a channel between the contrasting interests of Yahoo!'s profit goal and the community's social and communicative aim in using Flickr. In addition, among Flickr's team there are activists who developed Indymedia, protest.net and other activist platforms (E. Rabble, Interview, August 28, 2009)**.** In this regard, placing such creative and activist profiles between the corporation and the community is a way of linking social processes and activists' creativity with a profit enterprise. The Flickr team acts as a **broker**

234 Although in corporations floated on the public stock exchange, community members sometimes buy shares and in this way have a way to intervene in Flickr decision - making.
235 Source Flickr.com (Retrieved May 15, 2010).

between the corporation's interests and the community's interests, which highlights two main tensions between the Flickr team and Yahoo!. On the one hand, the Flickr team defend and advocate for the community's interest and empowerment before Yahoo!'s commercial interests (E. Rabble, Interview, 28 August 2009). On the other hand, the Flickr team wants to keep its own identity and independence as a working group apart from Yahoo!.

Within the Flickr team there is the figure of the **community manager** who acts as the contact point between the team and the community. Community managers are in charge of community control and implement the policies set up by Yahoo! to regulate community interaction. The generation of a particular culture within the platform results from active intervention from community managers. This contrasts with the image of the Flickr community as "self organizing" which ignores the importance and the scope of these interventions by the community manager. Community managers also intervene to block participants or remove content which is not deemed appropriate by Yahoo! (E. Rabble, Interview, August 28, 2009; B. Johnson, Interview, December9, 2008). The community managers try to get to know the community through "participative observation". The communication with the community takes place though blogs, forums and via e-mail. Community managers are also in charge of collecting community feedback for the design and maintenance of the platform. In fact, users play an important role in the innovation of the platform (von Hippel, *2005)*. For example, before introducing a change in the platform, the community manager works internally to review participants' feedback and solicit new feedback from the community through blogs or forums. After the change is made, the community manager encourages participants to actively participate in the discussion regarding the appropriateness of the change. In the words of a Yahoo! community manager: *"By giving people ownership of something and allowing them to influence their product, they are more likely to stick with the product and have a positive impact"* (Yahoo! community manager intervention at Online community report unconference). On some occasions, participants criticize changes incorporated by the provider. The community manager also deals with the reactions of participants. Additionally, Yahoo! lent importance to the emotional dimension and emotional linkage of the community within the platform (M. Alpern, Presentation at Wikimania and interview, 28 August 2009). Thus, another task of the community manager is "managing the mob" or "convoying sentiments". For example, addressing calm mad/sad/frustrated feelings within the community when things are changing at the platform.

An additional part of community management (especially of commercial communities) is the creation of "false" users created by employees who participate in the community and act as regular participants without revealing the fact that hey are Yahoo! employees.

In sum, Flickr's infrastructure governance is characterized by the structural closedness to participant's involvement. Furthermore, the linkage between Yahoo! and the community is mediated by Flickr's team and bridged by the figure of the community manager. Community managers control the community and preserve the order defined by Yahoo!; plus, they are charged

with ensuring the participants satisfaction with the platform design and policy and discouraging them from leaving.

IX. I. IV Blackbox: Limited freedom and autonomy of participants from the infrastructure provider

The Flickr platform is based on proprietary software and is copyright licensed. The blackbox conditions of Flickr restrict the possibility of replicating its activities somewhere else. As the software is proprietary, users do not know exactly what the program is doing with their data. They can not technically or legally modify the program nor create a copy of it to develop in another direction. Additionally, Yahoo! does not favor data portability and flow outside of the Flickr platform. This means that even though the participants are the owners of the data they upload at the platform, it is not facilitate for users to remove their data from Flickr and/or move their data from Flickr to somewhere else. Furthermore, in moving the data somewhere else, the participants would lose the network effect and the collaborative meta-data that joins all of the photos together. Finally, data ownership of Flickr is individually based. This makes creating an independent and autonomous archive complicated, as all of the participants would have to agree on using a free license or moving their data somewhere else.

IX. I. V Power embedded in Flickr infrastructure governance

Flickr is based on a "classic" distribution of **functions**. The participants develop the works or content at the platform. In other words, participants upload the large majority of photos on the Flickr archive, while Yahoo! as the Flickr provider takes care of everything else. This includes amongst other things, the technical base and maintenance, sustainability and legal issues.

The commercial providers depend on the community to develop the content of the platform. Volunteers also contribute depending on their own views and motivations. The lack of control over these important factors (the availability of volunteers to create content on the platform) indicates a weaknesses in these types of corporations. Furthermore, it makes the corporation vulnerable to their own corporate reputation. Corporations that do not rely on their own image to attract participants do not have to worry about their reputation. But if the community is a product of the corporation, then the corporation is in a lot of ways at the mercy of its participants, which makes it vulnerable. Thus, a body of people, large enough and vocal enough, could cause problems for the corporation.[236]

One consequence is that the community is more empowered with regard to the corporation, because the corporation depends on the community. Another consequence is that

236 It has been documented that workers at Silicon Valley tend to win labor struggles easily because of the dependence of media companies on a good corporate image and reputation (Bacon, 1993).

these create stimuli for ethical practices by the corporations. Corporations therefore make extra effort to maintain their reputation and image and to "gain" the trust of their communities and the general public. However, ethical debates on the role and behavior of commercial providers do not always conform to this - there is also the practice of creating "fake" images of the commercial providers in order to gain a reputation. I will refer to these practices with the concept of "wiki-washing".

Wiki-washing refers to a practice present in new media corporations which is based on building and promoting a corporate image based on a conscientious distortion of the real practices of the corporation, and/or the adoption of pro-democratic and community discourses (particularly associating its image with Wikipedia's reputation) with the only purpose of gaining a good reputation with the community and the general public. Wiki-washing is based on a similar mechanism to the green-washing of petrol corporations. For example, the platform presents among its values the quality of online sociability, and certain types of purpose (i.e., commercial ones) are systematically misrepresented (Werry, 1999).[237]

A platform which appears to have an active and fair relationship with the community is more valuable and attractive to participants and is more likely to be considered by the community during decision making. In this regard, corporations also fake the image of the platform with several mechanisms. For example, when staff act as community members to give the impression of a live community. Or when a community manager uses feedback to legitimize decisions, such as *"Tell(ing) people looking at new products, asking for suggestions (look or don't look at it), then when relaunching saying "This is what you wanted""* (C. Watson Community manager intervention at Online community report unconference).

Pertaining to the distribution of **ownership**, ownership follows the same distribution as function. Yahoo! owns the technological infrastructure and the trade mark; while the community owns the content. However, content ownership is individually based not collectively based. Each user individually owns the content she or he has produced. Flickr allows participants to choose which license they wish to use (copyright, "all rights reserved" or a set of several Creative Commons licenses). The participants who choose creative commons licenses (depending on the conditions of each license) allowing free access to others. Importantly, there are no collectively owned goods such as the entire archive, and so no collective licenses are held.

However, the distribution of **authority** does not reflect to the distribution of functions and ownership. Yahoo! has authority and ownership of the infrastructure, but Yahoo! also has authority over how the community functions. That is, the community is not self-governed and the rules and policies that govern the interaction are established by Yahoo!. Consequently Yahoo! has to establish tight controls over participants to maintain respect for the rules.

237 In Bill Johnson's words: *"They may have been giving lip service to this concept of: "we want to embrace the community and we're all about community for the community's sake. In reality, that's often not the case"* (B. Johnson, Interview, December 9, 2008).

Flickr defines the platform use and community interaction policies. For example, even moderation of communications between participants is in the hands of Flickr. Flickr is also in charge of "administrating the participants", if a participant is behaving inappropriately, Flickr can block his or her account and the participant will lose his or her photos (E. Rabble, Interview, 28 August 2009). However, Yahoo! does consider the participant's opinion to some degree when defining terms of use and policies. Yahoo! aims to increase participation, so defines the terms of use in order to satisfy and attract more participants (M. Alpern, Presentation at Wikimania and Interview, 28 August 2009). This is also the case for other commercial platforms, such as Wikianswers, where the policies are defined by the corporation, yet, according to a Wikianswers' employee: "Wikianswers have to be receptive to requests. They drive the community forward, we do not have to, but we listen to them" (Y. Goldstein, Interview, August 26, 2009).

However, the influence of participants on policy is based not on the fact that it is up to them to define the terms of policies, but based on the possibility of accepting or "rejecting" them. For example, Facebook wanted to change their copyright policy, but due to a revolt from the community was forced to reverse the change (M. Matsuzaki, Interview, October 2009).

There are several reasons to explain the compliance of Yahoo! to govern the community and establish the rules of the interaction. Firstly, Yahoo! has a profitable goal in terms of providing the platform. The platform design and the rules of interaction are driven by the Yahoo!'s profit goal.

The profit driven architecture of participation could be connected to the question that Yahoo! does not promote community self-governance. In order to fulfill its profit strategy Yahoo! needs some type of interaction and activity with the platform (the one which results in benefits increase). In this regard, Yahoo! cannot leave the community to decide what to do. Instead Yahoo! designs its framework for participation according to its profit strategy. This is not so in the case of Wikimedia or social forums, which do not intend to make a profit from the community, and so, can leave the community to self-govern and decide how to organize its interaction.

A second reason that explains why Yahoo! wants to keep control over the community is related to legal responsibility over the content. In general, the providers are not legally responsible for the works created by the participants at the platforms. However, the regulation on the level of responsibility over the content is an ambiguous area. For example, in the case of YouTube, in order to determine appropriate content, Google (as the provider of YouTube) used to rely on its participants to flag content as inappropriate or violating copyright law until a corporate employee determined whether the flagged material violated the platform's terms of service or copyright law. However, in July 2008 the Culture and Media Committee of the House of Commons of the United Kingdom stated that it was "unimpressed" with YouTube's system for policing its videos, and argued that "Proactive review of content should be standard practice for platforms hosting user generated content."[238] Due to this type of legal controversy, corporations are moving more and

238 Source Telegraph.co.uk article: "YouTube attacked by MPs over sex and violence footage" Retrieved December 18, 2009 from http://www.telegraph.co.uk/technology/3358061/YouTube-attacked-by-MPs-over-

more in the direction of policing the platform. In this regard, to avoid lawsuits, it is in the corporation's interest to ensure control and intervention over a content which does not respect copyright law. In March 2007 Yahoo! introduced mandatory filtering of all photos at Flickr and a process of central review of photos by Flickr's team to set levels of appropriateness. However, this is a complex situation because the violation of terms of services and copyright law is relatively frequent in these platforms. To insure that the content completely respects copyright law and the terms of service would create a massive amount of work for the staff and would be very costly for the corporations.

This contrast to the Wikipedia case in which the major involvement of the community in the issue of governance, results in a larger amount of voluntary resources at the community level for making sure that the content added is appropriate according to the community rules and respects the copyright laws. In other words, the Wikimedia Foundation does not control participants as Yahoo! does, because participants control themselves making sure the content does not create trouble in the Wikimedia Foundation.

The corporate system of validation of content opens up debates about censorship and several scandals have happened over the deletion of photos at Flickr by Yahoo!. Yahoo! is responsible for informing public authorities of content of an illicit nature. For example, Flickr provides information on participants uploading violent or pedophile photos (E. Rabble, Interview, August 28, 2009). This opened a debate on the creation of networked surveillance resulting from a collaboration of Web 2.0 corporate and Public authorities (Calenda & Lyon, 2007).

In conclusion, at Flickr there is a traditional distribution of functions between the provider (who takes care of technical maintenance and legal and financial issues) and the participants (who produce the content). However, Yahoo! has major authority in terms of judging participants' behavior and also defining the policies and terms of use of the platform in the first place. Participants are "free" to accept or reject the conditions imposed by Flickr, but they do not have the authority to change the policies and rules that govern user interaction within Flickr.

In conclusion, the number and strengths of the sources of power within the infrastructure governance in Flickr benefits Yahoo! in front of the community of participants in contrast to the other cases. Yahoo! depends on the community to create the content. Yahoo! has to provide terms of use for its service which attracts participants. Yahoo! also has to give priority to the community of interest in order to insure its reputation and attract participants. However, the community does not control and govern its own interaction. Instead, Yahoo! has control over participants' behavior at the platform and can control participants behavior. Additionally, the blackbox conditions of Yahoo! mean that the platform cannot be reproduced and that participants depend upon Yahoo! for access and reuse of their works. The individualized mode of participation reduces the chances that users will press their interests and demands onto Yahoo!.

---

sex-and-violence-footage.html

IX. I. VI How does the Flickr infrastructure governance shape the community?

A very large community of participants are involved in Flickr, with more than 50 million registered accounts.239 The interaction between participants is limited to individual actions and the collaborative generation of meta-data which creates the system. As a result of this interaction, a digital common is not generated as a collectively owned resource freely available for third parties. There are several mechanisms which link the infrastructure governance in Flickr with this community.

In contrast to open providers, the closed infrastructure governance of Flickr limits Yahoo!'s ability to activate volunteers to provide the infrastructure and content control of Flickr. However, Yahoo!'s for profit character insures Yahoo! the financial resources to make up for the lack of voluntary resources and to make up for the lesser knowledge on the community in closed providers. Yahoo! has the monetary resources to keep the infrastructure updated and running as well as the monetary resources to contract the best technical expertise and creativity. Additionally, Internet standards and regulations seem to favor multinational communication corporations. corporations support each other in order to maintain their dominant positions. In sum, the *professional* function of Flickr's services could explain the large size of its community.

A small part of society boycott the use of the corporate type of infrastructure because of its for-profit character and/or its capacity to control of participants' data. However, this does not constitute a strong trade off for Yahoo!: despite the boycott, Yahoo! remains very visible and dominates the market.

Importantly, Flickr is based on the architecture of participation which is designed to create flow more than to articulate content. The profit goal of the corporations is highlighted with the emphasis on flow and new activity (i.e., highlighting the last photos upload more than the organization of the photos). In other words, the profit goal is present in the design of the architecture of participation and content, which translates into a commodification of participants' behavior towards the profit goals (Danlberg, 2005a, 2005b). In order to increase profits, Yahoo! aims to maximize the number of people using its services, rather than design the interaction in order to increase an integration of the content. Yahoo! aims to increase flow of information and people connected to the site more so than to produce an integrated and high quality information resource.

Corporations aim to make a profit and in this regard they have an instrumental approach to the community of participants. The main sources of revenue are advertisements and paid services, which shape the platforms they provide. The demands of advertisers and the requirements to

239 Source Flickr blog http://www.flickr.com/help/forum/en-us/100485/page6/#reply672723 (Retrieved December 19, 2009).

increase paid subscriptions limit the type of content, number of participants, demographics of participants and the overall design of the platform as well as increasing growth and flow.

With regard to **content**, advertisers prefer content related to their products and do not wish their adverts to appear associated with certain types of content, for example, pornography or extremist political messages. This means that service providers must develop mechanisms to manage the content of the platform, such as moderation or peer review mechanisms. Due to the large amount of content generated by the participants this is a heavy task.

Advertisers have a preference for certain **demographic groups**, for example, with high consumption capacity, or interested in their type of products. In this regard, the commercial provider has to establish ways to attract the type of participants sought in order to be the preference of advertisers.

In term of demographics, previous research has found that, of a sample of 200 Flickr participants, 62% were men, 88% from North America or Western Europe, 15% worked in the Information Technology field and 15% were students (Yan, 2007, p. 34-5).[240] These demographics characteristics are particularly interesting to advertisers (Cox, Clough, & Marlow, 2008; Meyer, Hara & Rosenbaum, 2005; Yan, 2007).

Plus, the advertisers favor platforms with more and more members in order to increase the exposure of their advertisements and providers benefit from the increase in paid membership. In this regard commercial providers are encouraged to have most numerous **communities** possible. In the online communities culture, large numbers of participants are seen as a source to increase quality and to help solving problems. As stated in the famous phrase of the FLOSS, *"many eyes see bugs"*. However, in commercial communities the value of inclusivity also fits in with the commercial logic of recruiting the largest possible membership and exposure to advertisements.

Finally, the advertisers want **activity** (especially countable activity), and so the platforms are designed to increase information flow and renewal rather than archiving, integrating or systematizing the information on the platform.

The functions and terminology of Flickr are designed to influence behavior in the system towards "flow". Flickr's functioning and terminology emphasize activity, size, speed and increasingly global reach. Thus, rather than offering a model of a *digital archive* as an integrated "collection" of photos, where participants might build up a limited selection of their photos to complete the picture built collectively; Flickr's concept of a photostream (as well as echoing the structure of blogging) implies a constant need to take more photos. Equally, the formula for "interestingness" evidently assesses the interest of a photo by how recently it was uploaded. So Flickr is designed to reward recent activity. In addition, the navigating system in the platform also reflects the design towards "flow" and novelty, navigating to older photos in an individual's collection on Flickr is laborious, and as one forum contributor said: "The entire format encourages superficial browsing, following link after link. It's a very different experience to the contemplative

240 This mirrors wider digital divides (Dutton & Helsper, 2007, pp. 4, 62)

atmosphere of a gallery or an artist's photobook" (Soth, 2007). It could be also argued that this demand for novelty cannot be traced simplistically to the needs of advertisers but reflects a general cultural value, generated by media values about news or even a democratic ideology of inclusivity.

In sum, the commercial goal of Flickr is highlighted with the emphasis on growth and constant activity which impacts on participants, who place a value on their own actions in this direction.

Finally, the blackbox conditions of Flickr and the difficulties of data portability outside of the Flickr content is a way to "retain" participants and content on its own platform generating a dynamic centralization of its site. Furthermore, the type of collaboration at Flickr, based on the album type of collaboration, is less complex than in Wikimedia, Wikihow or social forums, which could help to increase its size.

IX. II. Wikihow: the mission enterprise model

The mission enterprise model is also closed and for-profit as with the corporation model of Flickr; however, it is based on a netenabler and commons-oriented policy.

According to the large *N* study, the mission enterprise model, has all the combined qualities for OCCs to increase the size of participation and *collaborativeness* at the same time. Being closed and for-profit, the mission enterprise model favors big communities; being netenabler, the enterprise model favors more collaboration. Furthermore, these communities are based on self-governed communities, although their infrastructure providers are for-profit character.

The discourse of this type of profit provider is characterized by two main distinctive elements: mission oriented and netenabler settings.

Putting the **"mission first"** or the "mission before profit" refers to a profit entity whose primary mission is to accomplish a social good, while the business goal remains secondary. According to Jack Herrick, founder of Wikihow, this results in a **"hybrid organization"**, which is something in between a for-profit organization, a non-profit organization and the state:

> *"Traditionally there have been 3 typical organization entities which could be dramatically over simplified as follows: Businesses (...); Non-profits (...) and Government. Wikihow is an attempt to build a 4th organizational structure, one might call a hybrid organization. It combines the best elements of the 3 other structures: Like a non-profit, Wikihow focuses on fulfilling its mission to help people; Like a government, Wikihow is building a public good like a library or a park that can be enjoyed freely by all; and, Like a business, it uses profits to finance its operations, expansion and assure stability for the project."* (J. Herrick, Interview, December 4, 2008).

The tension between the social basis of the mission and the need for the provider to be profitable is also present in these types of profit provider as was presented with the corporate model of Flickr. However, in the case of mission enterprises, these tensions seem to be more

obvious in the relationship of the enterprise with other enterprises, and the competition of the platform's content with other "competitive" platforms, than between the participants and the enterprises. According to Evans Podromou, founder of Wikitravel and Identica: *"As wiki service providers, we straddle two very different worlds: the competitive world of Web business, and the cooperative world of Free Culture."* (E. Podromou, Open letter to Wikia).[241]

Secondly, this model is characterized by the principle of **netenabling** in regards to the level of freedom and autonomy of the participants. Autonomy refers to use of open standards (which facilitate the connection between platforms), open data (which facilitates the flow of information and the freedom to leave) and open source (which facilitates knowledge of how the program works and opens up the possibility of collaborative improvement or to adaptation it to other uses). In these settings, the individuals and the communities as a whole are also more empowered in terms of control over their production. This is illustrated by legally and technically being allowed to leave the platform individually and collectively, through open data and forkable content.

One of the strengths of this approach is that participants can have control over the platforms they use and the data they generate. Furthermore, as not only individuals, but more companies start to use more and more web based services, there is more pressure to ensure that data control is more favorable to participants (M. B. Hill, Interview, October 25, 2009).

Examples of mission enterprises are Wikihow (a how to manual), About us (website review), Wikia (a wiki farm)[243], Wikitravel (worldwide travel guide), Meetup (set up of meetings), Povo (city map guide), Identica (micro-blogging), Keiki (parenting guide), and Vinismo (wine guide). This is not a well known approach and only started to increase in 2005. No previous research was developed on this type of provision of the OCCs.

This model will mainly be illustrated through the Wikihow case study, even though references to other cases will also be made. Wikihow was founded in 2005. It is provided by Wikihow, a start-up based in Silicon Valley.

IX. II. I The provision of platforms of participation: How does it function?

Wikihow is a wiki for the collaborative writing of manuals on how to do things. For example, Wikihow hosts article such as "How to Write a Demonstrative Speech" or "How to Find Work While Dealing With a Long Term Medical Condition". In December 2009, Wikihow hosted over 66,000 how-to articles.[244]

Wikihow is provided by the Wikihow enterprise. The WikiHow enterprise is a for-profit company based in Silicon Valley. The Wikihow enterprise defines itself as "*a for-profit focused on*

241 Source Evans Prodromou blog. Retrieved April 15, 2010 from http://evan.prodromou.name/Open_letter_to_Wikia

243 A wiki farm is a provider that hosts independent wiki projects.

244 Source Wikihow portal. Retrieved December 15, 2009 from http://www.wikihow.com/wikiHow:Community-Portal

creating a global public good in accordance with our mission".[245] The enterprise is composed of five employees and the founder acting as the chief, who work in a one-roomed office.

Wikihow forms part of the change of model within the technological industry following the dot-com crisis in 2001. The founder of Wikihow was previously involved in eHow, a professional expert-base model of know-how. The high cost of expert-based articles was putting too much pressure into hosting profitable content and as well as invasive advertisement to cover the costs. Following the form of Wikipedia, the founder decided to change the model to an open and collaboratively wiki based one in 2005. In 2009, Wikihow is profitable by selective and optional advertisement. In contrast to eHow, Wikihow is based on a collaborative wiki instead of a expert-based content, and has a Creative Commons license instead of a copyright license; it is run on FLOSS instead of proprietary software; and, it is essentially governed and managed by its community rather than by the provider.

IX. II. II Community organizational form, culture and interaction dynamics

Wikihow is based the openness to participation and a collage type of collaboration. Any visitor to Wikihow can create an article. Once an article is created, other participants can edit, improve, or change it. Participants interact in the collaborative development of the articles and in the social spaces (such as IRC and forums). In June 2008, the Wikihow community was composed of a total of 19 million unique readers, while the number of registered Wikihow participants stood at 175,373.[246] According to a survey developed by the Wikihow enterprise in 2009, participants' motivations to contribute are for fun, meaningful value and/or social recognition.[247]

Wikihow is a special case in terms of gender balance. A total of 43% of registered participants are women. In comparison to other OCCs, this is a higher percentage of women participating.[248] The reasons mentioned in the interviews for the gender balance within Wikihow are related to the culture of giving thanks, welcoming newbies, valuing non-violence and communication, among others (J. Herrick, Interview, December 4, 2008; B. Megas, Interview, August 28, 2009; N. Wilson, Interview, August 28, 2009). The community places importance on the sense of sociability and looking after each other. Actually, participants generate strong emotional linkages with the community*. "I have Wikihow in my head"* said one of its administrators (N. Wilson, Interview, August 28, 2009).[249]

---

245 Source Wikihow hybrid organization page http://www.wikihow.com/wikiHow:Hybrid-Organization (Retrieved December 15, 2009).

246 Source Wikihow statistics http://www.wikihow.com/wikiHow:Statistics

247 Wikihow survey to participants 2009. Retrieved from Jack Herrick video presentation on Wikihow, Wikimania, Buenos Aires, October 2009.

248 Such as in the case of Wikipedia the percentage is 13% (Ortega, 2009); while in FLOSS communities is much lower. A survey on FLOSS cases showed that just about 1.5% of F/LOSS community members were female at that time, compared with 28% (Ghosh, Glott, Krieger & Robles, 2002).

249 The welcoming of 'newbies' and sociability at Wikihow shows signs of similarity with the North American culture of relationships between neighbors.

There are several profiles of participation in the Wikihow community network. The Wikihow community is composed of networks of strong contributors (which are generally also administrators) that collaborate and interact on the basis of affinities. The main basis for affinities are age, approach to the platform and communication style. For example, there are personal preferences or generational habits linked to enjoying communication though IRC. Age is also a source of affinity. There is a network of old and young administrators. The founder and the staff is also a central node of the interactions. There are important nodes around single participants who make large contributions without major interaction with other participants. There are also occasional participants, an example of which would be a group of teenagers posting articles related to youth culture. Another important component of the community are the vandals and the 'trolls'.250 Finally, there is a general audience that is generally mute unless there is a problem or dispute and then only occasionally intervene (B. Megas, Interview, August 28, 2009).

In terms of **community governance**, the community is in charge of policy making and regulate its own interaction.

WikiHow has very few strict **policies** in order to facilitate inclusion. However, there are a few areas where specific policies are defined. Additionally, Wikihow is characterized by a *bold innovation method.* Most of the commonly practiced procedures on Wikihow arose from the ongoing organizational process: generally an editor has an idea for a new way of doing something and then just starts doing it. If other editors believe it is a good idea, they start copying it. Pretty soon it becomes the common way something is done. Furthermore, "to be bold" is encouraged by the community (B. Megas, Interview, August 28, 2009; J. Herrick, Interview, December 4, 2008).

In terms of the **formal method** for policy decision making, the community comes together to approve a policy formally. A wide community consensus and good supporting documentation is expected for rules which affect the freedom or actions of all participants (B. Megas, Interview, August 28, 2009). There are some very specific steps for how community members can add, amend, or delete a policy formally. [251]

Even though, the Wikihow founder may make any policy changes at any time, he or she shall fully inform the community whenever this occurs.

There are some specific **roles** among the community members who govern the interaction. Apart from the participants (anonymous or registered), there are 68 administrators and two bureaucrats.[252] Old administrators choose the new administrators.[253] These roles have more power

250 In Internet culture, a troll refers to someone who posts inflammatory, extraneous, or off-topic messages in an online community. See entrance on troll (Internet) at Wikipedia (Troll (Internet), 2010).

251 The proposal is discussed to reach a consensus decision in one week at the Village Pump (centralized communication place); if the discussion arrives at a consensus to proceed, there is a vote lasting another week. If a vote for support of the amendment is greater than 65% and there is no more than 15% of the vote opposing the amendment the proposal will be approved. This formal method aims to retain the consensual nature of the decision making process in OCCs while still allowing for the creation of a more definable decision. It is worth noticing that in contrast to Wikipedia case, this is a much more clear and defined process of decision-making.

252 Sources WikiHow statistics pages. Retrieved April 5, 2009 from

over the rest of the participants (such us blocking participants that are not respecting the policies). But there is also an incentive within the description of these roles to negate special value or the image that being an administrator is not a privileged role, but a service role responsible for completing specific tasks (N. Wilson, Interview, August 28, 2009). Enterprise staff are also administrators or bureaucrats of the community. There is also a distinction between older community members and newbies; with channels for older or experienced members to train newbies.

Additionally, the **founder** is a central figure the community depends on. The founder's role is dependent upon his personality and charisma.. Some authors point to the non-authoritarian leadership characteristics of OCCs leaders (Reagle, 2007).[254] The founder is the reference point in the communications between Wikihow and the community. Furthermore, he is very social and gets to know all the top contributors personally (B. Megas, Interview, August 28, 2009; N. Wilson, Interview, August 28, 2009). The building of personal relationships and a visible friendly personality seems to be key in enterprises. However, it may also make scaling up these types of cases difficult.

The resulting how-to manual is built collaboratively and collectively licensed and owned by the community.

In conclusion, the Wikihow community collaborates for the development of a common goal, a how-to manual, which is collectively owned. The Wikihow founder and enterprise staff collaborate with the community in the development of the content and intervene in community governance. However, the community is also in charge of its self-governance.

IX. II. III Wikihow closedness to community involvement in infrastructure governance

As with Yahoo!, the Wikihow enterprise is a for-profit company. As a company, it is structurally close to community members. That is, community members cannot be part of the enterprise composition. However, importantly, in contrast to Yahoo!, the Wikihow enterprise does not only base its relationship to the community on offering a service. Wikihow also collaborates with the community in the development of the community mission. This is the major relationship of the Wikihow enterprise also participating in content creation.

---

http://www.wikihow.com/WikiHow:Statistics and retrieved November 10, 2009 from http://stats.wikihow.com/reports/EN/TablesWikipediaEN.htm

253 Notice that they are not chosen by the whole community as in Wikipedia.

254 In the founder terms: *"So I have the same thing in Wikipedia that Jimmy Wales has, which is sort of the benevolent-dictator-for-life policy. (...) The more I sort of do things unilaterally, without the community, then basically I start losing the support of the community. (...) Policies only works if people agree with them. I can't possible do them all myself. When I intervene generally is not a way for me to get my will, but the will of the community."* (J. Herrick, Interview, December 4, 2008).

In this regard, a “we” identity is formed around content creation by the participants and the staff of the enterprise working together to accomplish the mission. This “we” is defined as those fulfilling the common mission.

A way to be involved in the enterprise is to be an employee; however, there are different criteria regarding whether or not to contractually employ or not administrators or active members of the community. Wikihow decided not to give contracts to administrators because then they lose their volunteer status, which may create “tensions” or “jealousy” among other volunteers. But other enterprises, such as Wikitravel, do place their administrators under contract.

Because there is separation and autonomy/independence of the Wikihow enterprise from the community, there is no overlap between the community and the provider in fulfilling tasks outside of the content. In other words, there is no volunteering outside of the content. This makes it difficult, together with the dependency on the personal figure of the founder in the communication with the community, to internationalize and scale up Wikihow.

Communication with the community by the Wikihow enterprises takes place through a mix of formal and informal channels; through the platform in the community forums discussion, IRC Chat, and conference calls or sometimes via email to consult about decisions or occasional meetings with top contributors, as well as a regular community newspaper announcing the main news. There is also a community meet-up every year. Facilitating community formation and sociability also seems to be an essential task of Wikihow enterprises, for example through organizing social events.

Linked to the fact that there is less participation by the community in the provider space, the Wikihow enterprise needs to make an extra effort to understand the community (such as developing surveys or getting involved in community activities) (J. Herrick, Interview, December 4, 2008).

Wikihow does not “report”, listen to or consult the community on legal and sustainability and profitability issues. But on other issues related to Wikihow enterprise functions, the Wikihow enterprise made an extra effort to co-involve, listening and consulting the community. This is the case concerning interface design and technical maintenance, the license or the terms of service. This is intended to give the sense that the community’s concerns are considered.

In Jack Herrick, founder of Wikihow’s words:

> *“I think there are some areas where the community decides everything, and there are some areas where the company decides everything. And then some places where they meet. Community decides things like for example on policies (or how the content is created). The companies decide on business stuff such as negotiating the reduction of server costs (...) in which I don't involve the community. (...) Or legal things, I don't bring the contributors into this, I hire lawyers. A mixed example would be on something the community has to say and the business has to say. For example. in*

the advertisement or something in which the community would have some feedback." (J. Herrick, Interview, December 4, 2008).

Communication within the Wikihow community takes place mainly with strong contributors, who are consulted and asked for feedback; and then the general communication is though the platform with the rest of the community (B. Megas, Interview, August 28, 2009; N. Wilson, Interview, August 28, 2009).

There is also an explicit effort from the Wikihow enterprise to stimulate participation through signs of recognition and material incentives, and more incentives for top contributors. Top contributors in for-profit companies seem less motivated by the mission, so there is an explicit effort to provide incentives for becoming a top contributor. Examples of material compensation are courtesies (i.e., paying for food for meetings), payment of travel expenses to events for active contributors, payment of training courses (such as on non-violent communication), or showing that Wikihow cares about its administrators by giving Christmas or birthday presents. In order to increase the meaning of participating into Wikihow, its enterprise has a principle of "giving back to the community" (i.e., sending books to Africa) and "social-ecological responsibility" (i.e., being carbon neutral).

IX. II. IV Netenabler: Freedom and autonomy of participants from the infrastructure provider

The netenabler conditions of Wikihow are based on the use of FLOSS and a copyleft license. On the one hand, this favors freedom and autonomy from the infrastructure allowing for information flow and reuse. For example, the Wikihow content is used freely for educational purposes.

Importantly, due to the netenabler, the Wikihow community has the *"right to fork", m*eaning that content and software of Wikihow is reproducible. In the event that Wikihow's enterprise steward fails to act in a manner consistent with the mission, the community can move everything to a new server run by a different provider. Thus, netenabler conditions provide a source of power to the community for guaranteeing that the Wikihow content will remain free and community controlled.

In Jack Herrick's founder of Wikihow terms:

> *"(It is) because of the right to (fork), basically, that I think people are willing to participate. If Wikihow the enterprise (...) really stop being mission focused and start doing things that are not mission focused, (participants) are going to take what they've done and go somewhere else. I think the concept of things being (forkable) will create, in the online world, essentially, that the community will ultimately have more control over the product and the organizations (…) than in the offline world.*" (J. Herrick, Interview, December 4, 2008).

In contrast, in the Yahoo! corporate model the software and content are the property of the controlling corporation. Participants in those communities are locked into those corporations and have only the "*right to leave"*. On the other hand, the resulting outcome, a how-to manual, is collective owned and freely accessible to third parties, which are characteristic of digital commons.

IX. II. V Power embedded in Wikihow infrastructure governance

In Wikihow, **function, authority and ownership** tend to have the same distributions, as it is the case with Wikipedia and social forums. Providers take care of certain functions and have authority and ownership over them, while the communities develop other functions and are self-governed in the sense that they have the authority over the interaction process between participants.

The Wikihow enterprise takes care of the technical infrastructure provision, legal framework and the logo and trademark, and has authority and ownership over them. The participants cannot become involved in decision-making regarding providers' matters nor have representation within the provision body. Wikihow has autonomy and independence from the community in terms of its own function and authority. An enterprise is expected to be accountable and transparent, as regulated by the law, but it does not have to be transparent towards the community on certain matters (such as financial or legal issues). There is no delegation of power to the community at Wikihow on these matters as there is at Wikipedia. There is not even the expectation that Wikihow will inform the community about these issues.

The communities develop the works, own them and have authority over the works. However, the Wikihow enterprise has more involvement with the development of the content and over the authority on the content development process than the case of Wikipedia and social forums. The founder and the other workers in the enterprise are active editors of the platform and intervene in discussions and decision–making on policies or any other issues. Furthermore, they have administrative and bureaucrat roles, and the founder can change the policy at any time. In this regard, there is a less clear division between the provider and the community in terms of content creation and community governance.

In terms of distribution of ownership at Wikihow, the Wikihow enterprise owns the domain name and the trademark and technical infrastructure (servers) and some office supplies and furniture. The rest is collectively owned. Wikihow operates on FLOSS and a free content licensing model allowing free use and community collective ownership of the content.[255]

255 The software was produced by adapting open and free software (MediaWiki) under General Public License, which means that anyone can use it and everyone owns it. WikiHow's content is published under the Creative Commons Attribution-Noncommercial-Share Alike (by-nc-sa) license, which means that the content can be modified and reused for non-commercial purposes as long as the original authors are attributed and the license is not substantially changed. It might be worth noticing that wikihow started with a copyright content licenses. This was a source of criticism as a content policies that sought to make a profit from volunteer contributors. In other words, the content license is considered to make the difference between

Importantly, the free content license is mandatory to the entire content created. Instead of being individually based.

Finally, in terms of power embedded in Wikihow's infrastructure governance, in Wikihow, the community is more empowered from the provider in several aspects. On one hand, the commons-base model is based on doography principles. The community develops and owns the content, as well as having authority over it. This infers that communities are self-governed, in the sense that communities define the rules and assign the roles of the interaction process. However, community is only self-governed with limitations. The Wikihow enterprise is also involved in community self-governance. Additionally, as the Wikihow enterprise is closed, the community cannot intervene with and have authority over the provider's functions. Secondly, netenabler conditions favor the freedom and autonomy of the community over the infrastructure as the infrastructure can be reproduced. The community collectively owns the content and the content can be reproduced; the platform software is also reproducible. This creates conditions for the community to "leave" and "fork" if the community, or part of it, does not agree with the provider's behavior. Finally, as the content is owned collectively, the forking is carried out more easily.

The enterprise model represents that profitability is not against community autonomous empowerment.

IX. II. VI How does Wikihow shape the community?

Wikihow is a medium sized online community. It is among the 1000 most visited sites on the web[256] and involves the active action of at least 200,000 people. The interaction between the participants is very collaborative and involves complex combinations of activity in order to realize the mission.

The closed for profit character of Wikihow limits is capacity to raise volunteering resources to cover the infrastructure provision. This makes it particularly difficult for the internationalization of Wikihow experiences and as a consequence the up scaling of the community. Being for-profit the Wikihow enterprise creates more monetary resources to reinforce the infrastructure's function, which facilitates the technical maintenance of the platform and increases participation. In terms of trust, Wikihow downplays the lack of control over infrastructure governance by publicizing netenabler conditions, which empower the community. The major control over the content and infrastructure seems to facilitate collaboration within the Wikihow community. In creating confidence Wikihow is also important for the role of the founder and its intermediation with the community. However, the dependency of the personal figure of the founder also seems to be a source of limitation to the Wikihow community scaling up.

"contribute for the benefits of all *versus* contribute for the benefits of a company".

256 Source Alexa.com Ranking. Retrieved May 12, 2010 from http://www.alexa.com

IX. III. Conclusions

Several debates and controversies are linked to the commercial providers of platforms of participation online, and concern issues such as producing unemployment; the exploitation of free labor; and wiki-washing (the practice of creating “fake” images of commercial providers in order to improve their reputation). This chapter addressed commercial strategies of platform provision and how they shape the relationship between the commercial provider and the community.

There are some common aspects in the governance of commercial providers. There is a structural “closedness” between the provider and the community as a whole. Two main typologies of closed and for-profit providers can be distinguished: corporations and enterprises. Although both are close to community involvement concerning infrastructure provision, these two models differently frame the relationship between the provider and the community. Furthermore, they are contrasting cases in terms of the level of freedom and the autonomy of the participants with regard to the infrastructure and the provider. Finally, these two cases differently shape the communities emerging from the platforms provided by them.

In corporations, the relationship with the participant is based on offering a service. The platforms hosted by corporations may begin with participant involvement. However, when the functionality is stabilized the participants involvement is replaced with the reassertion of a commercial relationship in the use of a service. At this stage, participants’ involvement in the platform is limited to using it. Although there are several ways to retain the innovation of the service through participant co-involvement, participants individually and as a whole have no position in platform governance. In sum, there is closedness to contribution from the community on infrastructure governance matters. Additionally, there is a remoteness or distance between them, there is not overlapping or collaboration between provider or community.

In mission enterprises, there is also a structural closedness to community involvement in the infrastructure governance. However, the enterprise are near the community and overlap in the development of a common mission. The enterprise collaborates with the community in the development of the content.

While in the case of corporations, there is interaction between the provider and the community of participants in terms of doing something together; there is no “we”. Instead there is a corporation that offers a service which participants accept or not according to the terms of use defined by the corporation. The corporation depends on participants because they “buy” a service and because in their use of the platform they generate content which is profitable for the corporation. In this regard, the corporation depends on the participants and this translates into their trying to keep them happy over the terms of use and providing a good service in order that participants do not “leave”. Instead, in enterprises, a “we” identity is created around content creation formed by the participants and the staff of the enterprise working together to accomplish

the mission. This “we” is defined as those working to fulfill the common mission. There is collective interaction for the achievement of a common mission which results in common property. Additionally, community self-governs the process of its interaction, and although the enterprise also intervenes in community matters, there is a less clear division between the provider and the community in terms of content creation and community governance.

In terms of the level of freedom and autonomy of participants from the commercial provider, a major distinction can be made between netenabler and corporate models. The netenabler conditions of Wikihow, on the one hand, favors freedom and autonomy from the infrastructure allowing for information flow and reuse. Importantly, due to the netenabler, the Wikihow community has the *“right to fork”*. This netenabler condition is a source of power for the community guaranteeing that the Wikihow content will remain free and community controlled. In contrast, to the Yahoo! corporate model based on blackbox conditions. Participants in those communities are locked into those corporations and only have the “*right to leave”*.

Major distinctions emerged from these two cases in terms of **how the infrastructure governance shapes the communities**. Although both are based on closed and for-profit providers, blackbox conditions favor a growing community (as in the Flickr case) while netenabler conditions favor collaboration (as in the Wikihow case). Importantly, while Wikihow resulted in a digital commons collectively owned and freely accessible for third parts. The Flickr - corporation model cannot be defined as a community which built a digital commons. In Flickr, the process is individually oriented and does not generate a digital commons, as the resulting outcome is not collectively owned.

The **commercial goal of corporations** is translated into an emphasis on growth and new activity which impacts on participants, whose commodity is their own action in that direction. In this regard, the participant experience is designed to be centered on the individual. Each participant decides the conditions of the collaboration and each participant constructs their own pathway through the platform. There is no overall integrated community involvement. The resulting overall outcome, the digital archive, emerges from the synergy of individual contributions and tagging, and is not an explicit mission goal nor is it of common ownership.

In **conclusion,** while for mission enterprises the commons is the mission and the profit is the means, in corporations, the profit is the goal and the commons merely a by-product.

Chapter X

Commons logic *versus* corporate logic: Case studies comparison

All the OCCs are characterized by being a net of individuals that communicate, interact and collaborate, mainly via a platform of participation on the Internet; and aiming at knowledge-making and sharing. However, according to the results of this research two contrasting logics can be distinguished: Commons logic *versus* corporate logic. The difference lies in the two main axes of governance infrastructure: level of openness versus closedness to community involvement in the infrastructure provision transparency and open decision-making and level of freedom and autonomy of the participants with regard to the infrastructure. The **commons** logic is characterized by a community-oriented governance and a netenabler and commons-oriented policy. In community-oriented governance the infrastructure is driven and controlled by the community: interaction with the platform is self-governed by the community, and both community and provider follow a common mission. In the **netenabler and commons-oriented policies** participants are individually and collectively free and autonomous from the infrastructure provider; and, a digital common collectively owned and freely accessible for third parts results from the interaction. This is the case with both foundation models, such as Wikipedia, and assembly models, such as social forums. This is also the case for enterprise models, such as Wikihow, although in the case of enterprise models the infrastructure governance is closed to community involvement.

The **corporate** logic is based on corporate oriented governance and a blackbox and non-collective base policy. On the one hand, corporate oriented governance infers that participants' interaction is governed by the corporate provider. The infrastructure governance is controlled by the corporation and is driven by profitable purposes, in which the corporation does not share a common mission with the community. On the other hand, **blackbox and non-collective base policy** infers that participant interaction is "trapped" and information cannot flow beyond the infrastructure. Additionally, the process is individually oriented and does not generate a digital commons, as the resulting outcome is not collectively owned. This is the case of corporation models such as Flickr.

According to these research results the **commons logic** (Social forum - assembly model, Wikipedia - foundation model and Wikihow - enterprise model) constitutes an online creation community for the building of a digital commons; while the **corporate logic** (Flickr - corporation model) cannot be defined as a community which has built a digital commons. In his analysis of common-based peer production, Benkler does not distinguish between these two logics (2006). Considering both Flickr and Wikipedia as common-based peer productions, Benkler pointed out

that common-based peer production is different from the firm (such as the case of the state) and the market. In my view, this can be applied to the **commons logic**; while the **corporate logic** is profit-driven and constitutes an innovation in capitalistic production.

These two logics of infrastructure governance shape communities differently. While the **corporate** logic is able to raise the most participation; **commons** logic is able to create the more collaborative communities.

In this chapter an analysis based on a comparison of four case studies will be presented. First, an indepth description of what characterizes each case in terms of its strategy of infrastructure governance will be presented. The differences between the cases in terms of their infrastructure organizational strategy (openness *versus* closedness) and conditions (netenabler *versus* blackbox) will be explored. The tensions linked to each of the models will also be compared. After having acquired a more indepth understanding of how each case functions, the differences of how infrastructure governance can explain the diverse performance of each of the cases in terms of size and collaboration of the communities will be addressed.

X. I. Openness *versus* closedness involvement of the community into infrastructure governance

Collective action online is dependent upon certain infrastructure, and the infrastructure design importantly shapes the collective action. While some OCCs are based on a participatory infrastructure governance, other cases are based on a close infrastructure governance where users of the infrastructure can not intervene in the decision-making and have control over the infrastructure.

In the following section, comparative analysis in terms of openness *versus* closedness of the community to involvement in infrastructure governance will be presented. The analysis will be developed with regards to the relations between the provider and the community. In order to assess the level of openness versus closedness, attention will be given to the structural position of the provider and the community, decision-making rights distribution, the level of collaboration, and how the communication takes place between them.

The social forums assembly model and the Wikipedia Foundation model are based on open provision. Participants in the platform have the possibility to be involved in infrastructure governance matters. However, although both are based on a participatory approach there are differences between social forums and Wikipedia cases.

The **social forum** is based on a total openness to participation in the infrastructure governance. The group in charge of the organization of the platform provision remains opens and follows an assamblearian organizational form in which decision-making is taken by consensus and there are volunteers, not contractual agreements between the parts.

The Social forum started as a mobilization process around events organized by an International Council. In this regard, Social forum platforms are connected to a larger and mainly offline base. Additionally, the social forums case more than by an approach of provision, is characterized by an approach of self-provision or “adoption” of platforms of participation online. A "pre-platform" collective identity "we" and process mainly offline existed before the online platform was created and goes beyond the online platform. This pre-platform “we” decides to self-organize in order to adopt an online platform of participation. In this regard, in the case of OCCs promoted by the social forums, the OCCs are shaped and bridged by the collective identity of the social forums as a whole.

A self-selected group of people compose the provision body, in charge of the infrastructure provision and maintenance. In normative terms, any person who agrees with the social forums mission (the Charter of Principles of the WSF) is welcome to the provision body. However, participation at the provision body is not always accessible. For example, the information required to be able to participate in the provider body such as, contact e-mails or e-lists to get in contact with the provision body are not available in the platform. Due to the larger offline dimension, the information required to participate in the provision body circulates in the offline meetings (Kavada, 2006). Furthermore, as the participation in the provision group is on a voluntary basis each person has to cover the resources (of travel costs, time and skills) of his or her participation. With the result that although the provision body intends to be totally open, it is not accessible for everybody to participate in the provision body.

The promoters of the platform at the Social forum case are part of a larger entity, the International Council of the WSF. Within the frame of this larger entity there is a working group (web team or communication commission) which takes care of maintaining the platforms. The web team has to create doable “promoting” exercises. On the one hand pushing for the International Council to support the adoption and further development of the online platforms, and on the other hand, promoting the platforms among the community of participants at the social forums events. In the end, the main participants of the platforms and works creators are on the same team which takes care of the platform provision. In this regard, it is difficult to make a clear distinction between the platform provision and the community of participants for this case.

Other examples of the assembly model, of total openness and assamblearian organizing, are Indymedia, a "do-your-media" site starting in 1999, and protest.net, a collaborative calendar of actions. Both linked to the GJM mobilizing.

The **Wikipedia** case is also based on participatory infrastructure governance. However, the organization of the participation of community participants into the provision body is different from the Social Forum case. The Wikipedia participatory approach is based on representation and is meritocratic, in contrast to the totally open and self-selection base of the social forums.

The Wikipedia Foundation follows a traditional organizational form. It is a legal entity with a board and a classic organigrama. Structurally the Wikimedia board is partly composed by

community members. The members of the board are elected by the community. Foundation staff are also selected according to their community background.[257] Furthermore, there are Foundation commissions composed of a mix of the Foundation staff and with roles fulfilled by selected volunteers from the community. Additionally, the Foundation "consults" the community though several means. For example, the community participates in defining the strategic planning action of the Foundation. There are also communicational channels where the Foundation keep the community informed of its activity and where the functions of the Foundation are discussed. However, the level of co-involving volunteers and informing the community is dependent upon the specific issue. Actually, Wikimedia Foundation moves along a line of more closed versus more open to community involvement depending on the issue. For example, for legal and funding it is closed, while for technical maintenance it is more open. In other words, in some aspects, there is a separation between the Foundation and the community, while in other issues there is an “overlap” between them.

Similar approaches to openness to infrastructure governance was found in other cases of Foundation models such as in FLOSS communities (Lanzara & Morner, 2003; Markus, 2007; O’Mahony, 2005; O’Mahony & Ferraro, 2007).

In *sum*, there are two ways of organizing the participation and co-involvement of the community in infrastructure governance. While Social forum is based on an open provision in terms of participation by self-selection (anyone who is available to be part of the provision body is welcome) and the organizational of the provision body is assamblerian; Wikimedia Foundation is formally organized and "filters" the community involvement in the Foundation according to representational and meritocratic criteria.

The two cases also contrast in terms of transparency. Wikipedia was found to be very transparent and the social forums highly opaque. The higher level of transparency of the Wikimedia Foundation seems to be linked to the need of the Foundation to build trust from the community. Furthermore, the contractual agreements to assure the actions and the clearer contractual agreements could be a reason behind facilitating the performance of transparency. In contrast, the volunteer base and minor task distribution of the infrastructure provision in social forums organizing could minimize the performance of transparency in this case. Additionally, the poor performance of the transparency dimension of the Social forum case could be linked to its bridging with other offline processes. The building of trust and the circulation of information connected to transparency happens at the physical meetings, but not online. According to the large *N* analysis, the poor performance of the transparency dimension in the assembly model and the major transparency of the Foundation model is significant for the other cases of these models in the sample.

257 However, a balance between the community background and the full filling of professional needs is search, so not all the board and staff have a community background.

Finally, it is worth observing that the Wikimedia Foundation has not always followed this form. In fact, Wikipedia governance evolved over time. The Wikimedia Foundation evolved from an informally run Foundation into the formal Foundation of today. This evolution from informal organizing to formal organizing within the infrastructure provision is linked to the community growth. The evolution to formal organizing within the infrastructure provision is one of the recurrent paths of the large OCCs. Also in the case of FLOSS communities, research has pointed out that as the communities grow, they tend to create a formally organized legal entity that solves some issues linked to the community activity (O'Mahony, 2007). Social forums expanded (around the world and to online platforms) and this was sustained over time, however, social forums did not evolve in terms of infrastructure provision organizing as Wikipedia did. This could be one of the reasons why participation in social forums platforms online did not grow or the platforms "died" over time.

While Wikipedia and social forums as open providers are characterized by a community driven governance of the infrastructure, Flickr and Wikihow are characterized by a **closedness to community involvement** in the infrastructure governance. Both are for profit companies. Closed providers have autonomy and independence from the community in their role of providing the infrastructure; there is no mechanism for participants' to be direct involvement or representation in the provision body's decisions, and there is no control or accountability of the provider before the community.

The closed provision of these cases also results in some other common characteristics. As most of the aspects linked to the architecture of the platform are in the hands of the providers, communicating with the participants to "know" the community became a priority for closed providers in order to decide how to drive and design the platform "for" the community. In fact, the innovation of the platform is importantly driven by the participants' ideas and feedback. Also characteristic of closed provision is the effort to stimulate participation through signs of recognition and material incentives, especially for top contributors.

Apart of these commonalities, there are also differences between Flickr and Wikihow in handling their closedness.

In **Flickr**, the relationship with the participants is based only on the offering of a service. In other words, participants' involvement in the platform is limited to using it. Additionally, Yahoo! establishes the rules to use the platform, there is no self-governance by the community in defining the rules of its interaction. In sum, participants individually and as a whole community do not have a position in defining neither the infrastructure governance, nor the governance of the interaction between them at the platform. Instead, the **Wikihow** enterprise is not only based on offering a service as Flickr. Wikihow collaborates with the community in the development of the works creation. Another difference is that, in Wikihow the community is more self-organized. That is, the Wikihow community defined the policies that govern their interaction in the development of the works.

There are other differences in the way in which Yahoo! and Wikihow related to the communities. Yahoo! is the provider of other platforms and has a specific team to handle Flirckr. The Flickr team is composed of the people who invented Flickr (before it was bought by Yahoo!) and creative social justice activists with experience in creating platforms for social movements (contracted by Yahoo!). This team constitutes an *broker subject* between the corporation interest of Yahoo! and the community social interest. An interviewee reported that frequently the Flickr team has to defend community's interest in front of Yahoo!s' profit goal. Putting an inter-medium subject in between the corporation and the community allows Yahoo! to link social processes in the use of the platform and the activist's creativity in the design and maintenance of the platform with the profit aim of Yahoo! (E. Rabble, Interview, August 28, 2009). Additionally, at the Flickr working team, the figure of the "community manager" is present as the contact point between the team and the community. The community manager is in charge of control the community fostering the activity that was supposed to be happening in the community according to Yahoo!; collecting participants' feedback for the platform design, and fostering an emotional linkage between the participants and the platform**.** The presence of *broker* and community managers in the relationship between the corporation and the community is also frequent in other corporate models cases, such as Google for YouTube.

In Wikihow, there is no broker *subject* used as in Flickr. Instead, the Wikihow enterprise has a more direct connection with the community. In this regard, the founder is a key piece in the relationship between the enterprise and the community. This is also the case with the other cases of enterprise model such as Wikitravel, a collaborative travel guide. The Wikihow founder becomes a leader of the community. Adversely, Flickr does not have "personality", its approach is of *neutral* service.

In *sum*, open providers, social forums and Wikipedia, are characterized by an infrastructure governance driven by the community. The providers and the community cooperate with regard to the infrastructure governance to the point of the creation of a space of overlapping or self-provision in which it is difficult to establish a difference between the provider and the community. Furthermore, the participants govern their interaction process over the platform. What distinguishes these two cases is that infrastructure governance in Wikipedia follows a representational and meritocratic logic, while in social forums it follows an open assembly format.

The Wikihow community participants do not get involved in infrastructure governance. However, provider and community cooperate in the development of the works in fullfilling the community mission, and in the governance of the interaction process.

Flickr is based on a sharp distinction between the providers and the community. The provider, a company, is closed to community involvement and the community does not intervene in infrastructure governance, nor on the governance of participants interaction at the platform. The providers provides a service and a community of participants congregates around it. It could also

be said that in this case there is an utilitarian approach to the community form; the community is not a goal in itself, but a means for profit purpose.

From another angle, in social forums, Wikipedia and Wikihow community and provider share a common mission and a mission which is defined in collective terms, even though, Wikihow combines the fulfilling of the mission with the profitable strategy. In these three cases, there is created a collective identity "we" between the providers and the community. This is not the case of Flickr. Flickr has a neutral approach as platform provider, it does not build a collective identity with the community. Furthermore, the Flickr community does not have a "common" goal or have the building of something collective as part of its mission, but its mission is defined in individual terms.[258]

Sustainability and commercialization strategy: Profit versus non-profit

The infrastructure provision involves some costs of sustainability. For example, it involves technological resources such as servers and technical maintenance and updating the software. Additionally, the information generated in OCCs has an economic value which could be commercialized. In order to better understand the differences between the infrastructure governance of the cases, it is worth considering and comparing the sustainability and commercial strategy of each case.

Flickr and Wikihow are of for-profit in character, which allows larger commercial volumes and profits are not necessarily re-invested in community activity. Instead, Wikipedia and the social forums are of not-for-profit character.

Wikipedia and social forums are of non-profit character. However, there are some differences between them in terms of sustainability strategy.

The size of the Wikipedia community and its popularity substantially increases the cost of the Wikipedia infrastructure, which has an annual budget of 7,5 million dollars. The larger part of Wikipedia budget is covered by small donation of community participants. Then, it is also covered by public and private institutions donations and partnership. Finally, in order to keep its independence and cover its costs, the Wikimedia Foundation commercializes some of the Wikipedia outcomes. In this regard, the economical value of the information generated by OCCs opens up new frontiers for independent and self-managed collective action. As the interaction generated value is susceptible to exchange in the market, this opens possibilities to solve the problem of covering the costs of collective action and the cost of the infrastructure underneath.

258 As they appear in the sites, Social Forum mission is *"Another world is possible"*, Wikimedia mission is *"Imagine a world in which every single human being can freely share in the sum of all knowledge. That's our commitment"*, the Wikihow mission is *"The world's collaborative how to manual"*; and Flickr mission is *"Share your photos. Watch the world"*. There is another peculiarity in the case of the Social Forum. In this case the mission goes beyond the online platform and is part of the social forum process as a whole. However, there are some specific goals for platforms, such as a map of action or a directory of groups.

As Mike Godwin from Wikimedia Foundation put it:

> *"It is very unusual that we are nonprofit, we do accept donation and that's the primary source of how we operate, but we have a number of commercial opportunities as well, which I think is very helpful (...). We are dependent on charitable giving but we have other options that we can explore in terms of keeping the projects operating. So that's kind of an innovation (to have something to sell)"* (M. Godwin, Interview, December 15, 2008).

Social forum sustainability is mainly based on a strategy of reducing the costs to a minimum by, for example, organizing the maintenance of the platforms on a voluntary basis. The coverage of these minimal costs is carried out fund-raising to public institutions, server donations or fees for offline events. The social forums sustainability is not based on the commercialization of the economical value generated by the community's interaction, as it is the case of Wikipedia. The small size of the social forums online platforms could be related to the lack of resources for its maintenance or to the minimalistic approach to the sustainability of its monetary resources. For example, one of the Social forum online platforms is no longer available because the server costs to maintain it were covered voluntarily by a person who then refused to continue to cover them on a personal base any longer.

Wikihow and Flickr are both of for profit character. They do not only commercialize part of the activity to assure sustainability, but also to create profit. To different degrees, both use publicity and sell participants behavior threads in order to sustain the costs and obtain profit from their activities.[259] However, there are some differences between them in their approach to their profitable character. Wikihow constitutes an experimentation of social oriented entrepreneurship in order to make netenabler conditions profitable and to put the social mission first. The arguments for Wikihow of being for profit are to obtain freedom from financial request, stability of the project and assure maintenance. Instead, Flickr is part of an economical innovation trend: the new economy of information flow and sharing, whose goal is to maximize profit. With the label Web 2.0, O'Reilly originally labeled this new business model of corporations giving services for community building online. According to O'Reilly, this change in the economical model started after the technological sector dot.com crisis in 2001(2005). Later,Tapscott and Williams created the term Wikinomics to refer to this (2007). Corporations tend to have monopolistic positions on the services they provide (Vaidhyanathan, 2009). According to Boltanski and Chiapello, it synthesis the *new spirit of capitalism* (2005). Turner brilliantly describes how this new wave of innovative capitalism is based on the adoption of social practices and principles of social movement organizing in the 1960s and 1970s (2006).

My analysis of OCCs governance, considering infrastructure governance and some of their models' for-profit character, challenges previous approaches to OCCs in the literature. In fact, Benkler claims that OCCs constitute a third form of production different than the firm and the

259 Additionally, Flickr offers paid services.

market (Benkler, 2006). Lessig (2008) considers they are not-market forms. OCCs are very innovative in terms of organization of production in the platform. However, in my analysis, OCCs provided by corporations cannot be defined as non-market forms. In my view, OCCs provided by corporations are better characterized by jeopardizing change in the business economical model in the media sectors.

Finally, the different sustainable and commercial strategies of the cases can also explain the openness versus closedness involvement of the communities in the infrastructure governance. corporate models are driven by a profitable goal. This is consistent with the sharp distinction between the provider and the community in this model and the lack of involvement of the community in the infrastructure governance. In sum, Yahoo!s' corporate infrastructure governance is profit driven in contrast to community driven as in Wikipedia and Social forum. Wikihow is an inter-medium case, because, as it defines how Wikihow presents itself, it is a mission oriented enterprise. In this regard, Wikihow combines community mission first and profitability second.

X. II. Neteneblar *versus* blackbox: Freedom and autonomy of participants

The other main dimension in the infrastructure governance refers to knowledge policy. Knowledge policy, in terms of works licensing and software used, defined the level of freedom and autonomy of the participants (individually and collectively) from the infrastructure and the individual base versus collective base of the ownership of the resulting outcome. It results in two approaches: **netenabler and commons-oriented policy** *versus* **blackbox and non-collective base policy**. The first is based on use of FLOSS and copyleft which, on the one hand, favors freedom and autonomy from the infrastructure allowing information flow and reuse, in other words; and, on the other hand, results in a collective ownership of the outcome. The latter blackbox conditions are based on the use of propitiatory software and copyright, which favors the provider as participants are "locked" in the platform, limiting information flow and reuse, and results in an individual-base ownership of the outcome.

Netenabler and commons-oriented policy is present in the Foundation model, as in the case of Wikipedia, and in the assembly model as in the case of social forums, and the enterprise model as in the case of Wikihow.260 In these three cases, it is possible for participants to "leave" the infrastructure, migrate the data and reproduce the platform, and to restart the interaction somewhere else, an action known as "forking". This ultimately empowers the community in front of the provider. It might be worth noticing that freedom and autonomy from the infrastructure does not necessarily lead to an actual autonomization of the community from the provider. Only in the case of Wikipedia did autonomization of the community from the platform provider took place with a

260 Social forum is based on FLOSS but in terms of licensing is more "informal". In Social forum a conception of information that favors use and reuse is present. However, at the Social forums there is fewer legal tradition, it is frequent that there is not specified a license for the works.

forking, when the Spanish community of Wikipedia decided to continue their activity somewhere else for discrepancies from the provider at the beginning of Wikipedia process.

In these three cases, based on netenabler and commons-oriented policy, a digital commons is created as a result of the collective action.261 Wikihow results in a free how-to manual; Wikipedia results in a free encyclopedia; and social forums results in a collective memory.262 The digital commons integrates the participants contributions and is collectively owned by them. Additionally, due to its free license, it is freely available to anyone over the Internet.

However, in the case of the social forums, the resulting digital commons is the social forums' memory, which is linked to interest in the process the platform is part of. Conversely, in Wikipedia and Wikihow, the resulting digital commons is of much broader interest.

The social forums case shines light on the limitations of netenabler conditions in terms of participants' autonomy from infrastructure provision. Openesf.net, due to a lack of proper maintenance and without any announcement or notice to their users, ceased to be available online. As a consequence, participants could not copy their data prior to the platform's "disappearance" in order to restart their activity somewhere else. This case highlights the importance of the provision role, ultimately showing that data is in the hands of the collective action.

The **blackbox and non-collective base policy** conditions of the Flickr case results in a restriction of the replicability of the activity independently of the infrastructure provider. Yahoo! does not favor data portability and flow outside the Flickr platform. Additionally, ownership of Flickr is individually based. The primary activity of Flickr is a flow of individual actions based on uploading photos in the same place. The building of an integrated information pool is a secundarian aspect of the overall dynamics in Flickr. The final archive results emerge as a result of the individual use of the sites. The final archive is not collectively owned, but the photos are owned by each of its authors. If the author chooses a free license, then that photo is also freely available for others to use.263 Similar conditions are characteristic of other corporate models such as YouTube provided by Google.

261 The term Digital Commons previously referred to hosted repository platforms used by associations, consortia, universities and colleges to preserve and showcase their scholarly output.

262 In the case of Social forums, the resulting digital common is more linked to the interest of the process the platform is part of. Instead in Wikipedia and Wikihow the resulting digital common is of more broadly interest.

263 Additionally, Flickr host also what is called *The Commons on Flickr.* Which are donations from Museums and other public institutions to make available their catalog of photos under public domain, through Flickr. In these cases the Flickr community contributes to organize those donations.

X. III. Hybridism tensions: Participation *versus* representation and Profit *versus* social tensions

Through my analysis, it is clear that what emerges as a relevant strategy in terms of infrastructure governance for increasing communities and collaboration is not an issue of binary polarization (open or closed, hierarchical or horizontal, profit or not profit, method or mission), but an eco-systemic and fertile blend of diverse dimensions. In other words, hybrid forms appear to be more suitable for increasing participation and collaboration.

The models of infrastructure governance combine several organizational logics. This is the case of the Wikimedia Foundation model, where the community follows a community-based form with a participative impulse. Provision is organized in a formal and traditional way complete with a representational rationality. Another form of hybridism is the case of the for-profit providers Wikihow and Flickr, in which the community is socially-oriented and the provider follows a for-profit strategy.

Hybridism seems to be well adapted to OCCs. These hybrid forms are able to create bigger communities and increase collaboration. In contrast, social forums, which are based in a community and participative organizing both in provision and the platform, perform successfully in terms of size and collaboration. However, hybridism is also a source of tensions, which I explore below.

Participation *versus* representation

As presented above, the Wikimedia Foundation does not follow the same organizational and democratic logic as Wikimedia communities. In this regard there is tension around organizational and democratic forms of expansion. The level of formal organizing of the Foundation will expand and be adopted for other aspects that go beyond content creation, such as the organization of community meetings. A tension is also present with regard to how often the Foundation has to solve issues for the community and a more representational role for the community.

It was mentioned above that the Social Forum is not hybrid in terms of different organizational forms and democratic logics within the community and the provision body. On closer inspection, it emerges that similar tensions are present in Wikipedia and the social forums between contrasting organizational logics (cathedral *versus* bazaar) and democratic logics (representation *versus* participation). However, these tensions emerge in different places.

Tensions are associated with the **hybrid form of each case**. Wikipedia is based on a hybrid form as it coalesces several organizational forms (for example, Foundation as a cathedral and the community as a bazaar). Social forums are based on a hybrid form which combines

several organizational forms. The Social forums' composition is based on different forms (the cathedral and bazaar) which are not split between the provider and the platform. Instead, the combination is present in both spaces (for example, participation in the forum provider is composed of trade unions and anarchist groups while the same can be said for participation in the platform).

In the Wikipedia case, tensions emerged around the openness of the Foundation and the relationship between the Foundation and the community as based on their different organizational and democratic logics. The tension in the Social Forum case appears in the adoption of the online platform itself, and the protocols to guide participation, because there is no separation between the provision of the platform and the different organizational forms of the providers and community.

Furthermore, for the Social Forum case, these tensions were already present in the provision of the offline platform, but were emphasized and created greater challenges for online participation (increase of individual participation and fragmentation).

Profit *versus* social tensions

The tensions between Flickr and Wikihow are based on the gap between the communicative and social goal of the users of the platforms and the economic profit sought by the providers of the platforms. This tension is expressed around "ownership" of the product generated by the participants.

In Wikihow this tension is minor as it follows a "mission first profit second" approach. Wikihow presents itself as prioritizing the accomplishment of the mission. The direct contact with and monitoring of the founder and Wikihow CEO is a mechanism used to assure the community of the accomplishment of the mission. Furthermore, Wikihow is based on netenabler conditions. If the community is not happy with Wikihow's business practices, they can take the content and software to set up somewhere else. In fact, Wikihow contrasts the lack of control of the community over provision with the successful favoring of the community under netenabler conditions.

Flickr, by contrast, is based on blackbox conditions. It is difficult for users to take their content somewhere else. This increases the tensions linked to Yahoo! being a for-profit corporation.

The element in Wikihow of making profit a secondary goal is also demonstrated through the principles of "giving back to the community" (i.e., books for Africa) and "social-ecological responsibility" (i.e, use of carbon neutral). To build a positive image is very important for social media companies as well as big corporations. Both depend very much on their reputation to attract participants. For example, it is recognized that the employees of these companies win labor battles more often, because the companies are more vulnerable to their protest actions as bad press.

In Flickr's stream there is also a "wiki-washing" attitude, an appearance of participating in the wiki spirit disguises the intention of building a good image. An example of this is the case of

Telefonica. Telefonica presented itself as having the goal of democratizing access to technology.[264]

X. IV. Case comparison on how does the infrastructure governance shape the community in term of size and collaboration?

How does infrastructure governance shape the community? Which are the mechanisms by which the different infrastructure governance logics shape the communities in terms of community size and collaboration? Why does corporate logic generate bigger communities while commons logic favors major collaboration?

From the large *N* analysis it emerged that the community of creators collectively operate differently depending on the infrastructure governance. While, the previous section presented the comparison of the cases in terms of their performances on the main axes of infrastructure governance, this section will explain why and how the diverse logics of infrastructure governance shape the communities. Firstly, why and how openness versus closedness of the community to infrastructure governance affects the size of the community and the level of collaboration established will be presented. Secondly, I shall look at why and how different knowledge policies also shape community size and collaboration.

X. IV. I Open versus close infrastructure provision and size and collaboration

There are several reasons why openness *versus* closedness to community involvement in infrastructure governance affects community size. Firstly, there are reasons connected to the ability to generate resources. While open providers are able to generate voluntary resources for the infrastructure provision; closed provider are instead better positioned to generate monetary resources. Secondly, there are reasons connected to the organizational strategy of the provision in terms of decision-making and resource management. While closed providers are better able to innovate in technical maintenance; open providers are better positioned to "know" which infrastructure design fits better in the community. Thirdly, there are reasons connected to the difference in terms of diverse trust raising and attracting motivations to contribute in the platform. While transparency and openness in infrastructure governance and non-profit character might be a source of major trust and contrive to increase participation in open providers for certain population, monetary incentives could be under the increase of participation in profit providers for other profile of population. Finally, there are reasons connected to how the different provider models shape differently the architecture of participation, which ultimately (or not) lead to major participation or

264 Source intervention of representative from Telefonica Argentina at the inaugural press conference of Wikimania 2009 (Buenos Aires, 25 August 2009).

collaboration.[265] These reasons, which link infrastructure governance strategy and size, will be explained in detail in the following lines.

More **resources** for the infrastructure provision and maintenance increase the quality of platform functioning, which ultimately can facilitate participation inclusion. Actually, according to the large *N* analysis, better functioning platforms lead to a larger community size. Additionally, larger communities have larger costs in terms of servers or technical maintenance, which ultimately require major resources to sustain them.

In terms of resources for infrastructure provision, two main types of resources can be differentiated: voluntary resources and monetary resources.

In participative infrastructure governance, providers and community collaborate for the infrastructure provision, which resulted in an increase of volunteering **resources** to take care of the infrastructure provision and maintenance. Instead, in closed to community involvement, there are no "volunteer" resources for infrastructure provision. While Wikipedia has an active network of volunteers who help create an international network of chapters, support Wikipedia's internationalization, contribute with the intention of spreading Wikipedia in the press, cover the technical maintenance or carry out fund-raising activities. Wikihow and Flickr cannot rely on such resources. This does not seem to constitute a major problem to a consolidated corporation as Yahoo! is; however, it is a trade off for Wikihow which, although profitable, it does have limited resources to sustain the activity. Particularly, the closed character of Wikihow seems to limit its internationalization.

There is two indirect specific mechanisms by which participant involvement in infrastructure provision facilitates an increase of participation in the platform. On the one hand, participants' involvement in the infrastructure governance facilitates the organizing of the offline societal life of the community. On the other hand, the increase of participation online goes together with the increase of the offline societal life of the community. In sum, in models in which there is not participants' involvement in infrastructure provision, there is minor offline activity, which ultimately leads to minor online activity. In other words, the closed character of Wikihow and Flickr restricts the offline societal life of the community, complicating the positive effect of offline life into an increase of participation online.

In terms of monetary resources, NTIs substantially reduce the amount of monetary resources required for an organization (Benkler, 2006; Shirky, 2008). Still, having monetary resources is to a certain degree a requirement for infrastructure provision. For example, infrastructure provision involves server and domain name costs. Furthermore, the costs of NTIs depend on the type used. NTIs can be accessible for resource poor organizations when they are used for communicating; however, NTIs are costly when they imply the mobilization of participation

265 There are other important reasons why some OCCs generate bigger communities or more collaborative communities. For example, the goal of the OCCs is also an important factor. There are activities for which there are more people interested to contribute than to others. However, the questions which are not related to infrastructure governance are not considered in this analysis.

(Bimber, 2003, p 177). In this regard, sophisticated uses of NTIs, such as those oriented to increasing participation and collaboration at the platform, entail higher costs which only rich providers can cover. For-profit strategies like those of Wikihow and Flickr, stress the generation of profit. Profit puts these sites in a better position in terms of monetary resources dedicated to re-investing in infrastructure. This could explain why according to the large *N*, corporation and enterprise models have better technical functioning and larger communities. Actually, as it appeared in the interviews, Yahoo! is able to attract the best technical and creative experts to design and maintain its platforms. This major technical expertise seems to be a source of the force of the profit models.

However, it is worth noting that Wikipedia, despite being based on a non-profit strategy, is able to generate a large amount of monetary resources from donations from participants. Social forum instead is based on minimizing the need for monetary resources, which conditions the efficiency in terms of technical maintenance of the infrastructure and ultimately, could explain its low level of activity or also the short life of the Social forum platforms due to a lack of resources to pay servers or to meet other needs that require monetary resources. Actually, according to the large *N* analysis, the assembly model is the model with larger percentages of platforms death.

Another set of reasons why infrastructure governance is related to participation size is connected to the **infrastructure governance organizational strategy in terms of decision-making and resources management** of the different cases.

Even if both the foundation model of Wikipedia and the assembly model of social forums are in a better position to generate voluntary resources than closed providers. The ability to organize volunteering resources is also relevant in terms the resulting increase in infrastructure functioning and so an increase of the participation size. It is worth mentioned that the skills required for infrastructure provision are very different than the skills required for the development of the content and works at the platform. Infrastructure provision involves high technical, fund-raising and counting, legal and press skills. Even with the ability to raise volunteer resources, it could be the case that those volunteer resources do not match the required skills. In this regard, the Wikimedia Foundation "filters" the volunteering in the Foundation according to the professional skills required to fulfill the Foundation functions. Social forum provision does not filter the participation according to the required skills for its responsibilities. Actually, it is frequent that at the Social forum provision there is a lack of people with the required skills to technically maintain the platforms. Additionally, the Wikimedia Foundation, apart from having volunteers, also have contractual staff to assure the fulfilling of certain tasks which do not fit with voluntary bases. Such as tasks that require daily dedication. These different organizational strategies of the provision of the Wikimedia Foundation and the Social forum provision could explain the better performance of Wikipedia and its larger size. In sum, even if the OCCs are based on organizational principles such as openness to participation, decentralization, volunteering, amongst others; there are some aspects linked to infrastructure governance that seems to require more formal organizing. In other

words, the OCCs which evolve to more formal organizing of the provision tend to increase in size. This is also the result from empirical research on FLOSS communities (Lanzara & Morner, 2003; O'Mahony, 2005).

The difference in terms of decision-making strategies between the open versus closed providers also seem to affect the size. The decision-making in open providers is more challenging as more people are involved in the decisions linked to the infrastructure governance. For example, in the Social forum the assamblearius format sometimes does not fit well with decisions involving the server's management, which results in the failure to properly serve the platforms. From another perspective, closed infrastructure governance seems to facilitate the decision-making for technical innovation. Open provision makes incorporated technical improvements as well as evolution in the platform difficult because so many people have to agree on them. For the Social forum case, it is easier to start a new platform, than to try to bring changes in existing ones. This is also the case with Wikipedia. Some of the interviewees in the Wikipedia case present their concerns that the Media Wiki that sustains the platform is not at the forefront of technological innovation and worry that Googlewave promoted by Google will substitute the role of today's Media Wiki (T. De Souza Buckup, Interview, August 28, 2009; K. J. Sitaker, Interview, August 27, 2009). In contrast, both cases of closed provision, Flickr and Wikihow, passed through substantial changes and innovations in their platforms designs. In other words, the closed provision of Flickr and Wikihow seems to facilitate innovation in the platform design over time.

In principle, in the cases based on open provision, in which there is a cooperation between the provider and the community, providers are in a position of knowing better the community and which platform design could be more valued for it. In this regard, the open providers are better suited to more complex collage type of collaboration. However, Flickr and Wikihow are able to cover this "disadvantage", by making an extra effort to "know" the community by having community managers in their staff dedicated to communication with the community. Although this could ultimately increase the dependency of closed provider on monetary resources.

Concerning the reasons connected to the difference in terms of **raising trust and attracting motivations to contribute in the platform** and so increasing participation size, open providers might be a source of trust and an incentive for some participants; while closed providers for other profile of participants.

Participatory open governance increases control of participants over the infrastructure. This major **control** could be a reason to increase trust and as a consequence raise the participation and collaboration in those communities. Additionally, participative open infrastructure governance is also characterized by a community which is in charge of governing the interaction process, that is: self-governed community. This could be also a reason to increase trust and motivations to participate in these platforms and increase their participation size. However, high volumes of participation are also present in closed infrastructure governance which imply no control over the infrastructure for participants and the participants do not intervene in the governance of the

interaction. Additionally, the provider has certain capability of control participants' data and behavior at the platform. Lack of control and being controlled by the provider does not impede increase in participation size. Importantly, what seems to be more relevant is that the major control on the infrastructure facilitates the increase in collaboration, more than participation. In sum, major control over the infrastructure and over the interaction process seems to explain the major collaboration in open providers.

However, openness is not a guarantee to increase trust. The assembly model is characterized by not having transparent performance at the platform in contrast to the foundation model which is the more transparent model. The informal character of the social forums, and its lack of transparent performance at the platform, could also be a source of mistrust and regulates its use by people not linked to the offline activities of the social forums and would explain the much reduced degree of participation in the Social Forum case in contrast to the other cases.

In terms of generating trust and increasing motivation to participate, providers which are for-profit also imply a trade off. There is mistrust towards profit providers among some people and the rejection of the use of them, both for the profit character and for the fear of data collection used for commercial or surveillance purposes. For example, activists of the FCM and the GJM reject using corporate model platforms or use them only to cover specific parts of their communications needs.[266] On the contrary, the non-profit character is also a reason to increase participation and a source of trust for some types of people, which also could explain the major collaboration of this type of provider.

However, it is characteristic of corporate and enterprise models to give material intensives to increase the participation of top contributors. The presence of these material incentives could also be a source for increasing participation among the user base. .

Finally, there are other sets of reasons that connect infrastructure governance and community size. The different provider models shape differently the architecture of participation according to their goals, which ultimately lead to major participation or collaboration. It could also be the case that both closed and open providers are both well suited to increase participation size and collaborations. However, depending on their goals, each model chooses to prioritize increasing size or increasing collaboration. Community driven governance aims for common-based collaboration which requires more collaboration. In this regard, the foundation model, as with Wikipedia designs the architecture of participation in order to increase collaboration. Instead,

266 SMOs do a selective use of the corporate platforms. They use the for profit platforms in an expositive-oriented way in order to spread information. For example, the use of Flickr photo uploading and photo comments to spread and communicate around posters or call for actions. Additionally, the lack of trust of corporate platforms and the trust of platforms with activist control could explain the different identitarian behavior they have in using the corporation model platform and the Assembly model. Activists use the corporate platforms with collective identities, that is with the name of a group and communicating around the group goals. Instead, activists reserve the use of individual identities and the use of platforms with personal networking purposes to the platform controlled and provided by SMOs. In sum, activists distribute their communication needs across types of providers: they use self-provided platforms in order to carry out networking and for internal communications; and they use corporate platforms for spreading their message and intervening in the "public debate".

corporations such as Yahoo! choose to provide platforms designed in a way that increase large communities and individual sharing collaboration, because it is these which better serve their profit goals.

X. IV. II How knowledge policy (netenabler *versus* blackbox) shape size and collaboration?

Why does netenabler knowledge policy create more collaborative communities, while blackbox conditions create larger communities?

From the comparative analysis, it results that there are several types of reasons why the knowledge policy affects community size. On the one hand, there are reasons connected to the raising of trust and motivation to participate. On the other hand, there are reasons connected to how it shapes the type of interaction that can take place.

The knowledge policy defines the freedom and autonomy of the participants in regard to the infrastructure. Additionally, it also regulates which type of use of the contents can be undertaken, and so, restricted the type of participation and collaboration. Finally, and importantly, it also defines the type of ownership of the work. While Flickr is based on a blackbox knowledge policy (based on proprietary software and copyright licensing); Wikipedia, Wikihow and social forums are based on netenabler knowledge policy (based on FLOSS and copyleft license).

According to the large *N* analysis, blackbox conditions in which participants are not free and autonomous from the infrastructure provider and the work is individually owned favors the increasing of community size; while netenabler conditions in which participants enjoy major freedom and autonomy from the infrastructure provider and the works are integrated and collective owned favor major collaboration. There are several reasons to explain this.

Flickr is based on creating participant dependency on the infrastructure and retaining participation in the "blackbox". For participants it is difficult to "leave". This could contribute to increased participation of Flickr in contrast to the other cases based on participants' freedom and autonomy.

Netenabler conditions of Wikipedia, Wikihow and Social forum conditions favor community empowerment which could be a reason for major trust and motivation to participate on those platforms. Although, participation takes place also with blackbox conditions, to develop complex collaborations at the platform requires better conditions and trust over the infrastructure providers. In the words of Povo founder, the same enterprise model as the Wikihow case, "the trust on Povo is not needed for contributors, but yes for passion". Major involvement of the participant in the development of more complex interaction and the rise of top contributors (which are key), requires the increase of trust over the infrastructure which hosts such interaction. Thus together with the presence of community self-governance seems to favor the increase of collaboration in netenabler cases. In this regard, the cases based on netenabler conditions, Wikipedia, Wikihow and social

forums, are based on a more complex type of collaboration, collage type. Instead Flickr based on blackbox is based on a more simple type of collaboration, the album type.

However the netenabler conditions are not sufficient conditions to lead to increased collaboration. Wikipedia and Wikihow created major collaboration in their platform, but Social forum did not raise much collaboration on its platform; again this seems to be connected to Social forum informal infrastructure.

Finally, and importantly, the knowledge policy in terms of conditions of access, reuse and the ownership regime also shape the type of collaboration raised at the platform. Netenablering is based on a collective ownership and the possibility to access and reuse the works, which favor collaboration and collective interaction. While blackbox conditions are based on more restrictive possibilities to access and reuse the content and on individual ownership by each participant of the works he or she created, which restrict the ability to collaborate and interact collectively. Although,it can act as an incentive to individual participation. In this regard, blackbox conditions are adapted for individual sharing, while netenabler conditions are adapted for commons collective building.

In Flickr, the works are individually owned. As a reflection of this, the participation is not collective driven and collaborative, but the experience is designed as individual-centric on information sharing. There is no overall integrated community involvement. The resulting overall outcome, the digital archive, emerges from the synergy of the individual contributions and tagging; it is not an explicit mission common goal and it is not of common ownership. In Flickr, there is host a conversation, more than a community for the building of something together. It is not that there is something which is not developed in common (the metadata which is very important is develop in common), but it requires very few common protocols which are integrated in the technical system itself. There is no need for human coordination; the platform drives the behaviors expected by the corporation which fits well with its profitable strategy. Furthermore, the participants do not intervene in defining the rules and policies of the platform; it is Flickr who governs both the infrastructure and the rules for interaction of the participants in the platform. Additionally, as blackbox conditions go together with a control of the provider over the work, instead of the self-governing of the community over the work interaction, participants at the platforms are dependent but also controlled by the providers. Finally, the work is available to others depending of the decision of each participant.

In Wikihow, Wikipedia and social forums instead there is, or there is the aim of creating relationships and a community dynamic and the resulting outcome is collectively ownership. The individual contributions are integrated in the overall work collectively built and is collective owned. The work also remains accessible for other people to use and reuse. All in all, netenabler favor collaboration, more complex collaboration and common-based resulting outcome.

X. V. By way of conclusion

Wikipedia is one of the largest OCCs and the largest of the four cases. Furthermore, it is the more collaborative and with the more sophisticated community self-governance. Wikihow follows the same scheme as Wikipedia, but it is much smaller community. Flickr is also one of the largest OCCs in the web. However, it has raised lower levels of collaboration among the participants and the participants do not intervene in the governing of their interaction process. social forums' online platforms are the smallest and raised very limited participation. Furthermore, actual governing of the platform was developed more during the physical meetings than with the community created on the platform itself. Finally, the particular platform analyzed for the Social forum case failed to keep provided.

An initial reason to explain Wikipedia's enormous dimension and success is its starting moment. Wikipedia started in 2001, a point when there were few other "competing" platforms. Since then, Wikipedia has been able to sustain a consolidated position over time as one of the largest communities online. Furthermore, the ability of Wikipedia to evolve in terms of governance over time seems to be an important reason to explain its success. Wikipedia has been able to adapt organizationally to the changing provision needs as the community grew over time. In this process, Wikipedia combines several organizational logics depending on the requirements of each stage over time. Wikipedia hybridism combines a Wikimedia Foundation based on formal and traditional organizing, which are well adapted to guarantee the technical sustainability and legal protection of the community; while the community is organized in an open and decentralized way, which is better adapted to knowledge-making. The open character of the Wikipedia Foundation also favors the availability of voluntary resources to reinforce infrastructure provision; while its formal organizing favors the capacity to raise monetary resources to also reinforce infrastructure provision. The Wikimedia Foundation's non profit character (and transparent quality) and netenabler conditions also contribute to increase trust and motivation for certain parts of the population to participate and contribute to the platform. In sum, the core reason for the Wikipedia infrastructure governance facilitating the increase in size seems to be its availability to convolving the community in infrastructure control and design which is a source of major trust, while at the same time being able to organize effectively the performances of providers tasks.

The **social forums** online platforms remain relatively small and some ceased their activity during the development of the research. Several reasons connected to its infrastructure governance form could contribute to explain the failure of social forums to raise participation online and sustain the platforms over time.

The social forums platforms favor community empowerment through openness to involvement in the infrastructure governance body and the netenabler conditions, which could increase trust and motivation to participate. However, self-provision requires a more offline basis because it is required a previous "we", which takes in charge the platform provision. The major

offline base of the social forum process limits the transparent character of the social forums platforms, constituting a trade off for raising trust among participants who are not involved in the offline dimension of the forums. The informality of administration could also reduce the interest of people not familiar with the social forums in using and adopting the tools.

Additionally, the open character of Social forum favors the capacity to generate **voluntary resources** for infrastructure provision and better knowledge on how to suit community needs. However, its informal character does not bond well with fulfilling provider functions such as technical maintenance of the server. Furthermore, social forums have difficulties in raising the required technical skills to maintain the platforms. In other words, social forums as online platform providers have a limited capacity to technically maintain and manage the platforms. Additionally the sustainable strategy of the Social forum based on minimizing the monetary resources, does not guarantee the continuity of covering the platform provision's monetary costs.[267]

There are other reasons connected to the provider goals with the platform and their population target. The Social forum platform goal is to support a social mobilization process. However, social movements have a **cyclical dimension** which could decrease the capability to sustain permanent spaces online. Furthermore, the type of **agenda** of OCCs promoted by social forums is often connected to an event-moment, which makes a permanent "interest" in OCC contents after the event or mobilization more difficult to sustain over time. Additionally, potential **target** participants of an OCC promoted by the social forums will be people who share in one degree or another the Forum's ideology. However, in 2008 the visibility and attraction of the Social Forum and the GJM was in crisis. The limits of the ideology that accompanies the Forums could reduce the attraction of its online spaces. Finally, there are other set of reasons why social forums "fail" to create communities online which are connected to internal resistances to these forms of collective action. Some sectors of the Social forum process are reluctant to depend on technology that could be a source of inequality in participation for the digital divide. Additionally, there is a tension in the social forums with regard to how to organize the participation at the platforms online. Some sectors are in favor of designing the participation online according to representative logics (i.e., Requirement to register as an organization) and other sectors are in favor of adopting an individual basis.[268]

---

267 Furthermore, the lack of knowledge and/or interest of the Social forum's leadership in the OCC phenomenon, results in a lack of political commitment to its promotion and the sustainability of platforms. Some reasons for the lack of knowledge and/or interest of the social forum's leadership in the OC could be: generational gap, fear of losing control over the Social forums, adopting channels that the leadership do not know, and questions related to political strategy.

268 Political actors adapt technology to their styles and organizational strategies. However, they also have to negotiate and adapt to the "hegemonic" culture using the technology predominant in society. In this regard, it seems there are some mismatches between the "hegemonic" Internet culture and the GJM culture. The "hegemonic" Internet culture is grounded in the USA, while the Social forums process is more Latin-American and European based. Finally, while the hegemonic culture of the Internet and the physical relationship with the Internet (a person in front of a computer or mobile) fits better with individualistic participation, the participation on individual bases is not supported by all the sectors at the Social forum process.

Contrary to open providers, the closed infrastructure governance of **Flickr** limits Yahoo!'s possibility to mobilize volunteering forces for the infrastructure provision of Flickr. However, Yahoo!'sfor profit character assures Yahoo! the monetary resources to contra-rest lack of voluntary resources and contra-rest the minor knowledge on the community in closed providers. Yahoo! has the monetary resources to keep the infrastructure updated and running. Furthermore, Yahoo! has the monetary resources to attack the best technical expertise and creativity. Additionally, Internet standards and regulation seems to favor multinational communication corporations. Furthermore, corporations support each other in order to maintain their dominant positions. In sum, the *professional* functioning of Flickr services constitutes an attraction source which could explain the big dimension of Flickr's community.

A small part of the population boycott to use corporate type of infrastructure because its profit character and/or its control capacity over participants data. However, this does not constitute a strong trade off for Yahoo!. Yahoo! is able to be very visible and to dominate the market with its services.

Importantly, Flickr is based on architecture of participation which is designed to create flow more than articulated content. The profit goal of the corporations is translated into the stress on flow and new activity (i.e., highlighting the last photos upload more than the organization of the photos), which impact on users commodifying their own actions towards those directions. For profit purposes, Yahoo! aims to increase the number of people using its services, more than the integration of its content.

The profit guiding of the architecture of participation could be connected to the question that Yahoo! does not promote community self-governance. Yahoo! in order to fulfill its profit strategy need some type of interaction and activity at the platform (the one who results in benefits increase). In this regard, Yahoo! cannot leave the community to do whatever the community decides to do. Instead Yahoo! designs its architecture of participation according to its profitable strategy. This is not the case of Wikimedia or social forums, which does not intend to extract profit from the community, and so, can leave the community to self-govern and decide how to organize its interaction.

Finally, the blackbox conditions of Flickr and the difficulties of data portability outside the Flickr content is a way to "retain" users and content on its own platform generating a dynamic of centralization in its site. Furthermore, the type of collaboration at Flickr, based on the album type of collaboration, is less complex than in Wikimedia, Wikihow or social forums, which could help to increase its size.

As it was previously presented for the Flickr case, the closed for profit character of **Wikihow** limits is capacity to raise volunteering resources to cover the infrastructure provision. This makes particularly difficult the internationalization of Wikihow experiences and in consequence its scaling up. Being a for profit Wikihow creates more monetary resources to reinforce the infrastructure functioning, which facilitates the increase of participation. In terms of trust, Wikihow

contras-rest the lack of control over infrastructure governance, with the favoring of netenabler conditions, which empower the community. In the building of trust, in Wikihow the role of the founder and its intermediation with the community is also important. However, dependency on the personal figure of the founder also seems also to limit the possibilities for the Wikihow community to scale up.

It might be worth commenting on another transversal aspect which interferes in the communities sizes, although, it is not directly related to the infrastructure governance of each case. In the Internet, there is a power law by which a small percentage of platforms obtain the large percentage of traffic (Shirky, 2008). Some platforms became very big such as Wikipedia and Flickr, while the large majority of platforms remained small. This also interferes in the possibility of each case to growth in terms of participation.

Wikipedia starting in 2001 was one of the first platforms able to grow substantially, it was benefited by the concentration effect of the Internet. One of the reasons which contributes to the concentration of participation in Wikipedia and other biggest communities is the network effect. The network effect refers that the cost-benefits equilibrium benefits the use of the same protocols of interaction. As more people use a protocol the more valuable it became to use it. In this regard, over time it is more beneficial to do something within the frame of Wikipedia than to create another platform. The network effect tends to favor the creation of "monopolies/centralization" of activities. In this regard around Wikipedia it has emerged that a set of other projects which resulted more beneficial to be created in the frame of Wikipedia than independently of it, which contributed to its growth. The value of being associated to the Wikipedia logo also could be working in the same direction. Instead, Social forum started relatively late in adopting collaborative platforms and in a context in which commercial providers had already gained ground from non-profit providers. In sum, the particular context in which Social forum started to provide platforms online was not favorable for the growth of social forums platforms due to the concentration dynamics of the Internet. Finally, the corporation model seems to be able to survive and better benefit from this tendency to concentrate the Internet traffic over a few sites rather than the other models. In some degree, there is also the presence of a competition between the different platforms and infrastructure governance models in order to attract online participation. Recently, there is a migration of participation from non-profit providers to for-profit providers. Plus a concentration of online participation in corporate platforms.[269]

269 This observations result from the analysis of Alexia.com ranking from 2008 to 2010.

Chapter XI

Power relationships embedded in infrastructure governance: Providers *versus* community

How does power work in OCCs? How does power frame the relationship between infrastructure providers and the community? How do the different logics of infrastructure governance (commons logic versus corporate logic) distribute power between the provider and the communities?

According to Castells (2009), in the global network society, there are four distinct forms of power: network power (the power of the protocols of communication to impose the rules of inclusion and dialogue); networked power (who has power in the dominant networks); network-making power (the paramount form of power, with reference to programmers and switchers)[270]; and networking power (the power of actors and organizations included in the networks that constitute the core of the global network society over human collectives or individuals who are not included in these global networks). In this list, Castells does not mention the importance of infrastructure providers.[271] In this regard, somewhat in line with and somewhat against Castells, I will argue that the role of the infrastructure provider for network building and collective action is fundamental in the global network society. In addition, there is a need to delve deeper and explore power relations in network forms and extract some commonalities of power in network forms, moving beyond Castells' assumption that "because networks are multiple, power relationships are specific to each network" (2009: 89).[272] Furthermore, the (emerging) institutional logic that frames the relationship between the infrastructure providers and users (individually, but more importantly, collectively) will be determined by the political shape of the society in the organizational environment.

270 Programmers refers to the ability to constitute network(s), and to program/reprogram the network(s) in terms of the goals assigned to them (agenda); switchers refers to the ability to connect and ensure the collaboration between different networks by sharing common goals and combining resources, while fending off competition from other networks by setting up strategic cooperation. In other words, the control of the connecting points between various networks.

271 The closest source of power to infrastructure providers in Castells' typology is the "programmers". However Castells does not specify providing infrastructure as part of the programmers' role, while he mentions questions (setting the agenda) which are not exclusive to the role of infrastructure providers.

272 Castells' definition of a network society is one whose *"social structure is built around networks activated by microelectronic, digitally produced information and communication technologies"* (2009, p. 24). The use of such technologies "impose" power constraints. The use of technological infrastructure ensures entry into the institutional order that regulates its use and access. The provision of technological infrastructure thus becomes key.

Within the framework of this research, power is regarded as embedded in the institutional order of the OCCs (Castells, 2009, p. 44)[273]. Power refers to a universal dimension present in any social relationship. In Parson's approach, power as the generalized mean of exchange (Parson, 1969).[274] Power is not seen as an attribute, but as relational and as a reciprocal relationship. In this regard, my analysis distances itself from an approach to the role of platform provider as the holder of some power with meaning or value in itself. Instead, my analysis approaches power in OCCs as being the consented, negotiated or/and conflictual relationship between providers and communities embedded in the infrastructure governance of OCCs. On the one hand, power in OCCs, as in any social relationship, does not only involve the entity who is the source of power, but also others who obediently consent to, accept or resist that power. On the other hand, social structures are based on power relationships that are embedded in institutions and organizations according to Lukes (1974). In this regard, an analysis of the distribution of sources of power between the platform provider and the community is developed, as they are embedded within infrastructure governance. To map the sources of power an analysis of the functions, authority and ownership present in OCCs will be carried out. The analysis of the distribution of those sources of power between the actors involved will consider the more or less equal or asymmetric positioning of the provider *vis à vis* the community. Furthermore, power distribution in OCCs is not regarded only in terms of the distribution of sources of power, but also with regard to typology (power for *versus* power over). Power involves an action or the possibility to take action. The direction of power in terms of benevolent and empowering (such as providers defending the legal interests of the community) or malignant and disempowering (such as providers controlling participants' data) will be also considered.

Finally, my approach is distanced from the elitist approach to power which refers to the existence of a unitarian hierarchy with material, symbolic and political resources all converging in the same hands (Hunter, 1953). Instead, in the line of pluralists, a more complex picture is depicted, with polyarchies based on the separation of the different sources and carriers of power in any social relationship. The exercise of power in a network society requires a complex set of joint actions that goes beyond alliances to create a new type of subject (Latour, 2005). According to Castells: *"There is not unified power elite capable of keeping the programming and switching operations of all important networks under its control that more subtle, complex and negotiated system of power enforcement must be established. For these power relationships to be asserted, the programs of the dominant networks of society need to set compatible goals between these networks. And they must be able, though the switching processes enacted by actors-networks, to communicate with each other, including synergy and limited contradiction"* (2009, p 47).

---

273 In Castells' terms: *"Power is the relational capacity to impose an actor's will over another actor's will on the basis of the structural capacity of domination embedded in the institutions of society"* (Castells, 2009, p. 44).

274 However, some authors argue that there are relationships which do not involve power; in fact, according to these authors there is no power without asymmetry in social relationships (Balandier, 1967).

The classical sociological definition of power by Weber understands power as *"the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which this probability rests"* ([1922] 1978, p. 53). This will be reformulated in order to be applied to my analysis of OCCs. While Weber's definition of power is based on a unilateral relationship; my approach to power is multidimensional and interactive. Furthermore, my approach to power integrates the different directions of power, considering empowering ("power for") and disempowering ("power over") forms. However, contrary to the binary antagonistic approach of Holloway's "power for" and "power over" (2002), the possibility for overlap between these two types of power in a relationship will also be considered.[275] This is in line with Foucault's conception of power where the latter is seen as a "multiplicity of relationships of force" (1977, p. 121). In conclusion, within the framework of this research, power is regarded as the series of situations in which an actor involved in a social relationship is able to impose its will, even in the face of the resistance of other parties or/and over third parties (external world) "for" the benefit of the other party, independently of the sources of such will and as they are embedded in the institutional order.[276]

Power in OCCs can be a source of inspiration for political imagination in terms of rethinking institutional logics for political organizing. Power in OCCs follows an eco-systemic pattern. A major featureof power in OCCs is its distributed character, which creates mutual dependency between the holders of power. In this regard, within the current organizational paradigm change it could be said that power follows a network logic confirming an eco-systemic, plural, multidimensional and interactive network.

In this chapter an analysis of the power relationships embedded in infrastructure governance will be presented. Power in OCCs is addressed in terms of the distribution of several sources of power between the provider and the community. Earlier research on OCCs has indicated the particular form of ownership present in these organizations (Weber, 2004). My analysis builds upon this early research on ownership within OCCs. However, in order to analyze power within OCCs it is relevant to consider not only the distribution of ownership, but also the distribution of functions and authority. In this regard, three aspects will be considered. Firstly, *who does what*, that is function distribution. Secondly, *who has authority over what*, that is the distribution of authority. And thirdly and finally, *who owns what,* that is ownership distribution. Once a map of power distribution characteristic of OCCs has been presented, an exploration of the type

275 In Holloway's view power "for" refers to the capacity or ability to do something. Power is for doing something. It does not involve a separation between the conception of the action and the execution of the action (there is no division of task and delegation). While power over is defined as forcing another subject to do something (there is a divide between the conception of the action and the execution of the action), power over is opposite to power for, as power over involves doing what someone else holding power over us wants us to do. While power for describes the capability to accomplish what the subject decides to do. Power over separates conception and execution (2002). According to Negri this is constituent power *versus* constituted power (Negri, 1999).

276 In a reciprocal relationship, I consider that even doing something for the benefit and "empowerment" of a subject forms a source of power over that subject.

of powers and asymmetries in terms of the empowerment of providers *vis à vis* the communities will be presented. Importantly, a sharp distinction in power distribution between commons logics and corporate logic is demonstrated by the analysis.

XI. I. Prosumers and the change in the media power matrix

In terms of the distribution of functions, a major commonality can be highlighted within the OCCs. The providers take care of the technical infrastructure, its sustainability and the relations between the OCCs and the external world. The relations with the external world refer to the symbolic dimension (trademark and logo management), fund-raising and press and legal issues. The community takes care of developing the content or the work.

Providers not being involved in content creation has occurred since the very beginnings of OCCs. For example, this was the case of the WELL, one of the earliest online communities (Rheingold, 1993). In addition, legal regulations tend to reinforce this distribution of functions. Most of the legal regulatory systems do not make providers responsible for the content created by the participants. In this regard, in order to ensure providers hold no liability over content, it is best that providers do not get involved in content creation. It is worth specifying that the issue of the liability of providers is independent of the type of provider. The introduction of provider liability would create prejudice for both for-profit and non-profit providers. Furthermore, it would most likely lead providers to censor some content; and it would make non-profit strategies difficult, as providers would have to meet the costs of liability.

Concerning the distribution of functions, in the four case studies, providers are in charge of infrastructure provision and symbols (trademark and logo), while the work is developed by the community. However, minor differences are present between the cases. There is a sharp distinction between the cases of Flickr and Wikihow in terms of the content being developed only by the community. In Flickr, providers do not get involved in creating content, yet in the case of Wikihow, the provider, particularly through the figure of the founder, is involved in developing the work. This is even more so the case for the social forums, where generally the "promoters" of the platforms within the context of the social forum are amongst the main generators of content.

According to this function distribution, participants are not "consumers", but "prosumers" (Toffler, 1980). Participants use the work available at the platform, but also create content. This is a major distinction between the "old" media and the "new" media (MacLuhan & Nevitt, 1972). Importantly, the "prosumer" character of the participants changes the power matrix between the "old" and "new" media providers in the public space. Providers of online infrastructure *depend* much more on the participants as creators of the content that gives value to the site. Providers depend on the participants to generate the content and to attract more participation and attention; while participants depend on the providers to give the infrastructure that supports their interaction.

As a consequence of the function distribution, a mutual dependency between the providers and the community exists.

The dependency of providers on the content created by the participants is illustrated ironically by the case of Google. Google's slogan is: "*Don't be evil*" meaning that Google cannot do whatever it wants, it cannot be *evil* (Vise & Malseed, 2005).[277]

Kow and Nardis use the term creative ecology to refer to the mutually beneficial relationships between companies and communities (Kow & Nardis, 2010). According to Kow and Nardis (2010) and Schang and Comas (2010), the development of new media co–evolves across three elements: designers, users, and a business rationale. However, as the design of the architecture of participation is controlled by the providers, I do not distinguish designers as a key element distinct from providers. In the words of Wikihow's founder: *"You might have some power, but you have to use it carefully because of the mutual dependencies"* (J. Herrick, Interview, December 4, 2008).

It is relevant to mention that fulfilling the function of infrastructure provision is a source of power from a Foucauldian standpoint in two senses (1977). On the one hand, infrastructure design defines linkages between individuals. The guiding and coordination of the interaction between the participants is transferred to the infrastructure design (Sartor, 2003, p. 17). The "code" in Lessig's terms regulates the cyberspace, just as architecture regulates real spaces. The regulation of the infrastructure limits the freedom of the participant (what they can or cannot do) and disciplines the participants into designed behavior. This form of power over participants is not direct and coercive (such as torture) but a "disciplinary power" in Foucault's terms (1977). On the other hand, in using the infrastructure participants generate digital threads (i.e., from which country the participant is connecting to the site, which topics he or she is interested in, with whom he or she interacts, among others). Providers have access to these digital threads. Adopting Foucault's point of view, the goals of power and knowledge cannot be separated: in knowing providers control and in controlling providers know (1977).

The mutual dependency of the distribution functions is characteristic of all the case studies independently of their types of infrastructure governance. However, in terms of distribution of authority and ownership there are differences. There is a qualitative difference between the settings of the corporate logic for the Flickr case and the commons logic of the other cases.

XI. II. Providers versus community: distribution of functions, authority and ownership

As presented in the previous section, the distribution of function is similar in both infrastructure governance logics. However, major differences are present between these two logics

277 More concretely, "Don't be evil" refers to the difference between Google and Microsoft in terms of being dependent on users. Microsoft sells a "package of software and once the transaction is complete, Microsoft is not dependent on the users; Google instead provides data flow services which run only with data generated by the users (Vise & Malseed, 2005).

in terms of the distribution of authority and ownership of the community *vis a vis* the provider (see following Table on distribution of functions, authority and ownership).

Table XIII. Distribution of functions, authority and ownership among communities and providers: commons logic versus corporate logic

	Provider	Community
Commons		
Functions	Technical infrastructure External relationship (Logo & trademark management). Press and legal matters. Sustainability	Work
Authority	As functions and ownership	As functions and ownership Self-governance
Ownership	As functions and authority	As functions and authority Collective ownership
Corporate		
Functions	Technical infrastructure External relationship (Logo & trademark management). Press and legal matters. Sustainability	Work
Authority	As functions and ownership Plus authority over the community	No self-governance
Ownership	functions and authority	Individually based

In the commons logic, function, authority and ownership follow the same distribution pattern. In corporate logic, function, authority and ownership follow different patterns of distribution. Importantly, these different approaches to the matrix varying between function, authority and ownership, condition the power distribution in the OCCs following these two logics.

In commons logic, function, authority and ownership are distributed similarly. The provider takes care of the technical infrastructure provision, legal framework and the logo and trademark, and has authority over them, and ownership of them. While the communities develop the work, owns the work, and has authority over the work. In other words, providers take care of certain functions and have authority over and ownership of them; while the communities are self-governed in the sense that they have authority over how the interaction processes between participants building the work will be; in addition communities collectively own the resulting work.

This is the case for Wikihow, Wikipedia and the social forums, although with minor differences. The social forums have no "formal" organization of ownership. The use of legal frameworks is rare in the context of social forums. In this regard, in the social forum it is common that the ownership of the work is not established by licenses. However, the informal ownership of the social forums follows the same concept of knowledge as the other cases with privileged access

and reuse as well as a collective character. Another contrast between this set of case studies is that, in the cases based on open infrastructure governance, that is Wikipedia and the social forums, the participants can get involved in decisions on providers matters if they wish to a certain degree. This is not the case with Wikihow. Also, Wikihow's providers have more involvement in community matters than in the cases of Wikipedia and the social forums.

In conclusion, in commons logic the common infrastructure governance logic creates a dynamic of doography. Doography means those who do something have authority over it and ownership of it.

Several aspects of the situation change in the corporate logic, which is the case for the Flickr case. On the one hand, the distribution of authority is not equal to functions. Flickr has authority and ownership of the infrastructure, but also has authority over the community's functioning as it establishes the policies of behavior for interactions within the infrastructure. In other words, the community is not self-governed. The rules and policies that govern the interaction are established by Yahoo!. Furthermore, those rules and policies establish the tight control of Yahoo! over its participants. For example, Yahoo! can remove material created by a participant if it does not follow the policies that Yahoo! has established.

On the other hand, the ownership of the works is not collective, but individual, and so community is not empowered in collective terms, but in individual terms with regards to work ownership.

This different matrix in terms of function, authority and ownership in the commons and corporate logics creates a different scheme of dependencies between the provider and the community. In other words, the number and strengths of the sources of power in the corporate logic benefit the provider with regard to the community of participants.

In conclusion, under both logics providers depend on the community to develop the work and content. The "vast majority of the work" is developed by the community. In other words, the participation of the community is the main necessity for achieving the stated goals. If there is a decrease in participation in the community, the providers have no way of replicating what the community does. It is worth mentioning that the large *N* analysis showed that the ratio between the number of people required to create the infrastructure for collective action online, and the total number of people involved in creating the content was small. For each person present at the provision space there is a mean of 55906 people creating content at the platform. However, the dependency of the community on the provider is more significant in the corporate logic than in the commons logic.

In both logics, the community could find ways to continue acting without the providers. However, the blackbox conditions and the individual basis of the corporate logic disempowers the community. Firstly, the corporate logic is not based on doography. The community does not have authority over its own interaction. The community cannot define the rules and policies of what participants do together. Furthermore, providers have the capacity to control the participants'

individual behavior. Providers can block the participation of a certain individual or can remove the content they create if, according to the provider, it does nor follow their policies. In other words, the freedom of speech of the participants in corporate platforms is "monitored" by the corporation. It is up to the corporate platform to decide whether to allow the content or not. Secondly, blackbox conditions in corporate models reduce the freedom and autonomy of the community. Blackbox conditions reduce the possibility to "replicate" the platform somewhere else and re-start the collective action without the corporation. There are even cases, such as Facebook, where the provider can request ownership of the content generated by the participants on its site, and create impediments for participants who seek to move their data elsewhere, as well as claiming ownership of data generated by them In addition, with blackbox conditions, users have no way of knowing what the software they are using is doing, for example if it is collecting their personal data and sending it somewhere else (Sarton, 2003, p. 18). In this regard, it is frequent that corporations commercialize their participants' behaviour data. This data is useful, for example for building marketing profiles. Participants in these conditions have the option to stop participating, but it becomes difficult to "leave" since the price is to lose one's own data. Thirdly, the individual base of the corporate model makes it even more difficult for the community to collectively declare independence from the provider. As individuals individually own content, they would have to agree in order to migrate the content somewhere else. This is not the case when the works are owned collectively and have a free character. With free collective ownership, there is no need for the entire community to agree on seeking autonomy from the provider. A part of the community can decide to migrate without the rest of the community.

In commons logic, the community is more empowered with regards to the provider in several aspects. On the one hand, the commons base model is based on "doography" principles. The community develops and owns the content, as well as holds authority over it. This infers that communities are self-governed, in the sense that communities define the rules and assign the roles of the interaction process. For the case of open providers, communities can also intervene in and have authority over the provider functions. Secondly, netenabler conditions favor the freedom and autonomy of the community from the infrastructure, as this can be reproduced. The community collectively owns the content, which can be reproduced; the platform software can also be reproduced. This creates the conditions for the community to "leave" and fork if the community, or part of it, does not agree with the provider's behavior. As the content is owned collectively, forking is more easily achieved.

The possibility of forking is a major feature in terms of community empowerment. Even if it does not occur, the possibility that it could do so forms a mechanism which empowers with regards to the provider. Actually, forking has only taken place in one of the cases, Wikipedia. However, forking occurs with a certain regularity in FLOSS communities (Hill, 2005).

It may be worth mentioning that as the community grows larger, the possibility of forking becomes more remote. Forking is more difficult when communities grow larger, amongst other

issues, because the reproducibility of a large and costly infrastructure combined with the network effect inside the community makes it more difficult to *fork*. In other words, as the communities grow larger, the balance of power tips towards the providers.

In summary, an exploration of the type of powers and asymmetries in terms of the empowerment of the provider *vis à vis* the community between the corporate and commons logics reveals that there is a sharp distinction in power distribution between commons logics and corporate logics. Commons logic is based on the empowerment of the community in terms of community self-governance and community autonomy and freedom from the infrastructure. Corporation logic is designed to empower the providers. The community is disempowered in corporate governance in several senses: the control of the corporation over participants' behavior at the platform; the dependency of the participant for access and reuse of their works on the platform; and, the non-enforcement of a collective frame.

It is worth mentioning that it is frequent for providers to use a discourse of empowering the community. However, according to the analysis not of the discourses, but of the sources of power, the empowerment of the community within the corporate logic is minor when compared to the commons logic. I suggest the term wiki-washing to refer to the practice of creating "fake" images of commercial providers in order to boost reputation.

Two senses of power are present in OCCs: **power "for"** and **power "over."** Power "for" refers to the power to accomplish a mission, a force that supports doing something, or a tool that allows a move. Power "over" refers to the control and domination of someone to direct and force their actions, involving an asymmetry between those with power and those over whom power is exercised.

In both logics, the dependency of the provider on the community as the content generator limits the power of the providers "over" the community. Participants are not employees, and the providers do not have any direct source of power "over" the volunteers to force them to do something. Providers could block the use of their infrastructure, but then they will lose their own role as platform providers.

However, a distinction seems to be present in terms of power "for" versus power "over" in the two logics. In the corporate logic, the provider controls the community and restricts its autonomy from the infrastructure; these constitute two sources of power "over" the community. Instead, in the commons logic, the power that providers hold is more based on being able to accomplish or provide something for the community than a power to force the community to do something. Providers in the commons logic do not have control over the community, as the community is self-governed and can become autonomous from the provider. Additionally, providers depend on the trust of the community to fulfill their role.

In conclusion, in a commons logic, providers have limited power "over" the communities in contrast to the corporate logic, and the power they do have with regards to the community is a power "for" supporting the community to accomplish the mission. The terms of being in parallel

with, and not “over and under” a hierarchy (or in the centre) could illustrate this relationship between the providers and the communities in a commons logic. During the interviews for the Wikipedia and social forum cases, interviewees were asked to sketch a map of the relationship between the provider and the community, and most did indeed depict the provider as parallel to the community. Other authors who have studied providers in open source and free software projects also suggest a similar argument with the concept of “lateral authority” (O'Mahony, 2007). Theorists have long predicted that project and networked-based forms will rely less on traditional lines of vertical authority and more on lateral modes of authority in order to achieve collective work outcomes (Barley & Kunda, 2001; Daft & Lewin, 1993; Miles & Snow, 1986; Powell, 1990; Romanelli, 1991).

Finally, the distribution of functions, ownership and authority amongst the providers and the participants in a commons logic generates an eco-systemic **mutual dependency** between them. The concept of parallel **co-governance** is appropriate for referring to a form of governance in which both provider and community play a role and a mutual dependency is formed between them.

Chapter XII
Conclusions

The digital and communication revolutions, processes of globalization, the post-industrial economy, and the increasing expansion of education in the global North, among other important processes, have transformed industrial society into a network society of knowledge-based wealth (Castells, 2000; Rifkin, 1995). In the digital era, these processes have changed the relational environment, thereby contributing to the reshaping of collective action. NTI have reduced transaction costs, therefore transforming the cost of collective action (Benkler, 2006; Coase, 1937). Bimber has pointed to 'information abundance' and scarce resources of attention as characteristics of this new environment (Bimber, 2003), where some organizational strategies have met with more difficulty in achieving their goals. De Tocqueville ([1840], 1945) stressed the importance of information flows in groups, which, as they become richer, see societal interactions increase and intensify.

Based on a combination of quantitative and qualitative empirical research, this study analyzes emerging collective action taking place on the Internet. It does so from a double perspective, considering both organizational forms and political conflict. On one hand, this research provides an empirically grounded description of the organizational characteristics of collective action in the digital era. In particular, it addresses how people embrace participation and collaboration. Importantly, the research also provides an empirical explanatory analysis of which organizational strategies tend to be more successful in increasing collective action in terms of participation and collaboration. On the other hand, it maps the diverse models of governance of collective action on the Internet and suggests a set of dimensions of democratic quality adapted to Internet-based actions. Importantly, this research identifies a fundamental conflict in this new environment. It describes two conflicting logics present in collective actions in the digital era: the commons logic versus the corporate logic of collective action. In the beginning of the 21st century, a global justice movement emerged, advocating globalization *from below* in resistance to neo-liberal globalization (della Porta, 2009). This research provides evidence that, 10 years after the turn of the century, a free culture movement in defense of digital commons is emerging to contrast corporate domination.

The empirical research is developed through the case of online creation communities (OCCs). OCCs are a set of individuals who communicate, interact and collaborate mainly via an Internet-based participation platform. They depend on this platform and share a common goal of knowledge making and sharing. Previous empirical research on OCCs has focused on FLOSS software programming communities (O'Mahony, 2007; Weber, 2004). This study is one of the first to expand the focus to OCCs concerned with types of knowledge other than software. In addition,

this study is one of the few studies of OCCs based on a case comparison278; as well as the first to combine large and small *N* comparisons.

Two spaces can be analytically distinguished within the OCCs: first, participants use a platform to interact, and that platform is provided by others. This research illuminates the gigantic difference between the providers and the community in that few resources are able to provide the infrastructure for very large collective processes. However, the provision part cannot be seen as a dysfunction or unimportant. It solves some of the important questions this type of online collective action raises. Previous research has mainly analyzed the organization and governance of the interactions of the community of participants, ignoring the organization and governance of platform provision. In contrast, this research analyzes not only the community of participants, but also the organization and the governance of the platform and other infrastructure required for the collective action to take place.279

According to the research results, the main organizational principles of participation in OCC platforms, as a case of online collective action, can be summarized in 8 aspects: (a) the platform is open to participation; (b) participation has multiple forms and degrees. Those diverse forms and degrees of participation are integrated; (c) participation is asynchronous; (d) participation in the platform is structured in small tasks and modules, which results in decentralized but connected participation; (e) the organizational process is transparent; (f) participation is autonomous in that each person decides their level of commitment and how they will contribute. Participation is also voluntary. Participants are not bound by a contractual relationship. As a result, participants assume the costs of participation; (g) methods or organizational solutions are shaped by the specific questions that must be answered in order to achieve a common goal, resulting in the adoption of a plurality of methods; (h) participation is implementation; and, in certain conditions, k) the communities regulate the rules and social norms that govern their interaction; and, j) the activity of the community results in a free or open digital commons.

These organizational characteristics are not accompanied by traditional principles associated with bureaucratic organization, such as those of pyramidal authority, centralization, and planning (Weber, 1946). Previous research by Coase (1937) has suggested that low transaction costs lead to non-bureaucratic organizations (Benkler, 2002). Bimber (2003) has suggested that as societies move toward information abundance, there is a decrease in bureaucratically structured organizations. However, O'Neil (2009) stresses that community organizations are highly structured (2009).[280]

The above organizational characteristics of OCC platforms shape participation, and in doing so the possibility of increasing participation is established. Much of the literature has

278 See O'Neil for a relevant exception of case comparison. The cases compared here are primitivist radical text archives; Dayly Kos, a progressive community weblog; Debian free software project; and, Wikipedia) (2009).

279 For a notable exception considering infrastructure governance for the FLOSS case see O'Mahony (2007).

280 Furthermore, O'Neil's work states that they cannot be characterized as Castells' *loose* networks.

highlighted how most OCCs have a tendency toward a strong inequality in the distribution of content contribution among participants, which results in a 90/9/1 law (Hill, Hollan, Wroblewski, & McCandless 1992; Nielsen, 1997; Ortega, 2009; Whittaker, Terveen, Hill & Cherny, 1998). In explaining how the organizational characteristics presented above are linked to the scaling of participation, this research goes a step beyond the existing literature and provides an argument as to why participation distribution in OCCs follows an unequal pattern.

The openness to participation principle has created the possibility to participate and the conditions for participation to increase. However, participants as volunteers assume the costs of their participation. In this regard, not all participants have the same availability. The several forms and degrees of participation result in varying degrees of contribution. The unevenness in participation affects the availability of contributions. These effects on contributions ultimately maximize the possible sources of participation, and the increase in total participation. Furthermore, OCCs profit from the synergy between the different forms and degrees of participation. These are: (a) active and committed participants are important to start the OCCs and provide most of the content; (b) weak participation allows vast and diverse fields of information resources to be reached; and (c) unintended participation improves the system. As audiences increase, the value and relevance of the content and the participation in the platform also increases. Finally, the decentralization of the participation facilitates increases in participation while maintaining a character open to participation. Decentralizing participation permits the management of large-size participation, and the autonomous and transparent character of participation facilitates the allocation and coordination of different forms of participation.

As a result of this research, I propose the concept of *ecosystemic participation* to stress the eco-systemic, feedback, and synergistic effects among the diverse forms and degrees of participation in the OCCs. The term ecosystemic participation highlights the co-dependency and mutual adaptation of the different forms and degrees of participation in order to find an equilibrium allowing the sustainability and effective achievement of the common mission.

Ecosystemic participation shifts the focus away from single and unequivocal dimensions (to participate or not participate) toward the development of dynamics in complex cohabitation and the co-evolution of diverse forms and degrees of participation. Participation is not an isolated act but an act coordinated with others and with the overall collective action. In this line, Bimber, Flanagin and Stohl (2005) suggest that recent uses of NTI for collective action challenge the notion that there is a binary choice between either participation or non-participation. This research provides empirical evidence on the ecosystemic dynamic of participation in OCCs.

In my view OCC governance is based on three aspects: policy-making concerning interaction in the platform, the space design or architecture of participation, and infrastructure governance. In other words, who can intervene in these three aspects and how decisions are made defines the OCC's governance. Previous research has focused on analyzing the governance of interaction in the platform, particularly policy-making (Burke & Kraut, 2008; Ciffolilli, 2003; Kittur,

Suh, Pendleton, & Chi, 2007; Kriplean, Beschastnikh, McDonald, & Golder, 2009; Loubser & Pentzold, 2009; O'Neil, 2009; Reagle, 2007; Stadler & Hirsh, 2002; Tkacz, 2007; Viégas, Wattenberg & Mckeon, 2007). This research points out that there is a need to distinguish the conditions in which the participants have the possibility to intervene in defining the rules of their interaction from the conditions in which the community cannot intervene in this. The type of infrastructure governance shapes the emerging community in several senses, including the possibility that the community governs its own interaction. Depending on the type of provider, the community has the possibility to self-govern its interaction, even though the platform or interaction governance remains in the hands of the provider.

Concerning the governance of OCCs, this research has shifted the focus from community interaction to include infrastructure governance. As O'Mahony (2007) shows for the FLOSS case, this shift allows a more complete understanding of the governance of OCCs. This research has pointed out the importance of how the platform provider is organized. This affects how the community develops and provides the infrastructure the community depends upon. This research clearly, and originally, demonstrates that the type of infrastructure provision shapes the emerging community. It is important to note that infrastructure governance influences the degree of participation and the type of collaboration in the platform. It also influences the role (or lack of it) the community plays in governing its interaction in the platform. This research is original in providing an empirically grounded typology of collaborative forms in OCCs. It distinguishes between *album types,* or collaborations based on the sum and synergy of individual acts, and *collage types,* or collaborations based on the merging of individuals' actions. This implies a more complex collective development. Shirky (2008) also suggests a similar typology of collaboration distinguishing between sharing, collaboration, and collective action In contrast to Shirky, I consider all types of collaboration as forms of collective action.

This research is original in providing a categorization of infrastructure governance. According to the research results, there are two main axes of infrastructure governance: *open* versus *closed* to community involvement and *freedom* and *autonomy* versus *dependency* on the infrastructure provider. These types of access are labeled *net-enabler* and *blackbox* conditions. Two contrasting logics arise from these two axes of infrastructure governance: *commons* versus *corporate logic*. Additionally, five main empirical infrastructure governance models are identified: corporate service provision, mission enterprises, university networks, autonomous representative or peer foundations, and assemblarian self-provision. Whereas the corporate service provision model is characterized by a corporate logic, the other four models follow, in differing degrees, commons logic.

The commons logic is characterized by openness to community involvement in providing the infrastructure, otherwise called community-oriented governance and a net-enabler policy. Community-oriented governance means that infrastructure governance is driven and controlled by the community; interaction in the platform is self-governed by the community, and both community

and provider pursue a common mission. A net-enabler policy means that participants are individually and collectively free and autonomous from the infrastructure provider. As a result, the digital commons is collectively owned and is freely accessible to third parties. **Digital commons** are defined as an *information and knowledge resources that are collectively created and owned or shared between or among a community and that tend to be non-exclusivedible, that is, be (generally freely) available to third parties. Thus, they are oriented to favor use and reuse, rather than to exchange as a commodity. Additionally, the community of people building them can intervene in the governing of their interaction processes and of their shared resources*.

Digital commons are a continuation and adaptation of the commons approach in a digital environment. Although Ostrom (1990) has not written extensively about the Internet and digital commons, her research on environmental commons shows that with an appropriate policy, people can develop governance forms in order to work together and manage collective wealth. Designated *non-traditional commons* (Hess & Ostrom, 2007) or *new commons* (Hess, 2008), these authors refer to the expansion of commons institutional frames to other areas, including digital commons. This research constitutes one of the very first empirical studies on digital commons. Corporation logic in this context is based on corporate-oriented governance and a blackbox policy. Corporation-oriented governance dictates that the corporate provider governs the participants' interactions in the platform. Infrastructure governance is controlled by the corporation and is oriented towards profit. The corporation does not share a common mission with the community. Black-box policy dictates that participant interaction is private and information cannot flow easily beyond the infrastructure. Additionally, the process is individually oriented and does not generate a digital community.

Finally, where an OCC following a commons logic builds a digital commons, corporate logics cannot lead to a digital commons. The outcomes of OCCs following corporate logic cannot be defined as digital commons because they are not collectively owned or shared, even where some parts are non-exclusionary. Finally, the community of participants building the outcome cannot intervene in the governing of the resulting resources nor their interactions.

My distinction between a commons logic for the building of digital commons and a corporate logic contrasts two of the more important facets of OCC research. In his analysis of commons-based peer production, Benkler (2006) did not distinguish between these two logics.

.For example, Benkler considers both Flickr and Wikipedia as commons-based peer production. In my view, Benkler did not distinguish between Wikipedia and Flickr because his analysis is focused on platform interaction without considering infrastructure governance. In this regard, Benkler characterizes the distinctiveness of commons-based peer production as individuals who collaborate on large-size projects without market prices or managerial command structures. Following Benkler, these are characteristics of the organizational forms of platforms; however, to define a commons-base form, in my view, one needs to consider infrastructure governance. If one

considers infrastructure governance, it can be argued that commons logic results in a digital commons; however, the same cannot be said in the case of corporate logic.

Benkler distinguished several type of resources necessary for information production and exchange, that create the environmental institutional conditions for CBPP: the physical layer (which encompasses ownership and control of both transmission channels and devices for producing and communicating information); logical layer (which refer to the necessary standards, protocols, and software that provide a point of control over the flow therefore the opportunities of production, of information and culture); the content layer (which refer to the intellectual property and business models that depend on tight control over existing information and culture – a central input into new creation – and threaten to provide their owners with the ability to control who gets to say what to whom with the core cultural signifiers of the universe of existing information, knowledge, and culture). Benkler argues that the battle to gain control over these three layers (which has a reflect on the lavers of legislative and policy activity in the domains of information and communications) will determine the future development of CBPP and ultimately, determine the future of our civilization.

However, my research does not leave these layers as environmental institutional conditions; but integrate the necessary interface of CPBB with its environment and how it shapes the community action in the analysis of the governance of CBPP.

Furthermore, it contributes to Benkler previous work by analysing how the CPPP evolve over time, and particularly how organizational principles of CPBB evolve as the scale of collective action increase.

Additionally, Benkler (2006) points out that *commons-based peer production* is different from the firm (such as the example of the state) and the market. Similarly, Gramsci (1971) claimed that *“between the economic structure and the state with its legislation and coercion stands civil society”* (p. 208). Although Habermas points out that: *"What is meant by civil society today, in contrast to its usage in the Marxist tradition, no longer includes the economy as constituted by private law and steered through markets in labor, capital and the commodities. Rather, its institutional core comprises those non-governmental and non-economic connections and voluntary associations that anchor the communication structures of the public sphere in the society component of the lifeworld."* (1996, pp. 366-367).

In my view, this distinctiveness in terms of the form of OCCs as opposed to the firm and the market can be applied to commons logic, but not to corporate logic, which is profit driven. Following Moulier-Boutang’s (2007), Chiapello and Boltanski’s (2005) and Formenti’s (2008) critical approach to corporate OCCs, this approach can better be characterized as a new wave of capitalistic production. This research sustains the critique proposed by those authors with empirical evidence. Corporation logic constitutes a reinvention of capitalism stemming from the adoption of organizational innovations arising from social initiatives and social movements. In this regard, Turner (2005, 2006) builds an excellent narrative on how the "counter-culture" of the 1960s lies at

the base of the new economy. Similarly, experiences within the GJM such as Indymedia in the invention of open publishing or user-generator content form the foundations of the Web 2.0 business model. As Gramsci (1971) pointed out for civil society, OCCs are a place of hegemony, and so of struggle. In this regard, the two contrasting forms of logic represent a fundamental conflict in the conditions of collective action in the digital era.

Additionally, OCCs contribute to redefining the role of civil society by going beyond Gramsci's (1971) and Habermas' (1996) notions of civic society. The characteristic elements of OCCs that are most significant in challenging these notions of civil society are that the participation goes beyond (Habermasian) deliberation in that participation is more to do with implementation. Participants implement actions; participation does not refer to choosing a public voice to guide the representatives' actions, to whom action is delegated. The overall collective action is guided by the *production* of informational resources. Plus, there is an economic value to social interaction in OCCs. In sum, commons logic OCCs have so far been seen only as spaces for public debate, or as constituting spaces for civic engagement in the dissemination of alternative information and deliberation. However, OCCs also challenge the market and the firm as a form of resource production and management.

Finally, this research is original in explaining how infrastructure governance shapes the community. The two logics of infrastructure governance shape their communities differently. Whereas corporate logic is able to raise the most participation, commons-based logic is able to create more collaborative communities.

The different abilities of the two logics in terms of generating different levels of participation and collaboration are tied to several factors: the ability to generate resources, the ability to manage resources according to organizational strategy, the ability to inspire trust and motivate contributions, and the ability to create conditions favoring collaboration (or not) through knowledge policies and the architecture of participation. First, open providers are able to generate voluntary resources for infrastructure provision, but closed providers are better positioned to generate monetary resources. Second, closed providers are better able to innovate in technical maintenance; open providers are better positioned to decide which infrastructure design fits the community best. Third, transparent and open infrastructure governance and a non-profit character may be major sources of trust and may increase participation for certain populations. However, monetary incentives can also foster increased participation in profit providers for other populations.

Fourth, there are reasons connected to knowledge policy. Net-enabler polices ultimately create the conditions for collaboration by allowing content access and the possibility of re-use, whereas blackbox conditions in corporate logics limit the possibility of collaboration. Finally, corporate logics generate larger communities because they better suit profit goals. In this regard, corporate logics result in participation designs that favor the flow of information more than

collaboration. Therefore, the flow of information and more participants increases the economic renewal of the site.

Other important reasons as to why some OCCs generate bigger communities or more collaborative communities are not connected to their organizational infrastructure strategies. For example, the goal of the OCC is also an important factor. More people are interested in contributing to some activities than others. However, questions that are not related to infrastructure governance were not considered in this analysis.

A more detailed analysis of five of the empirical models adds other important conclusions concerning which organizational strategies are more successful in raising participation and collaboration.

Although the corporate service provision model generates the biggest communities based on simple and low levels of (album type) collaboration and non-governed communities in platforms, the autonomous representation foundation and mission enterprise models are able to raise medium-sized communities based on more complex (collage type) collaboration and self-governed communities. It is worth noticing that the mission enterprise model, despite being a for-profit model, is one of two models able to generate larger collaboration. This seems to be connected to its net-enabler status.

Finally, university network, and assemblarian self-provision are the models least able to generate participation and collaboration. Different reasons account for this finding. The inability of university networks to generate collaboration seems to be connected to (a) its non-profit character and resultant lack of resources, (b) the inability to organize technical expertise for platform provision, and (c) an approach to collaboration that more closely resembles the expertise model than open online collaboration. The assemblarian self-provision model is successful in terms of raising participation; however, this model is records the highest percentage of failures. The assemblarian self-provision model is based on openness to community involvement to the point that it is difficult to distinguish between providers and the community. In this model infrastructure provision is informal and seems ill-adapted to the proper organization of the infrastructure. In conclusion, strategies based on the formal organization of infrastructure provision and the ability to create monetary sustainability are most likely to be successful in engaging and hosting online participation and collaboration.

Even if formalization and sustainability paths in infrastructure governance are the most successful in terms of raising participation and collaboration, they are not without problems. Where the platform provider follows a formal organizational form (based on representative principles and/or command hierarchies), and the platform follows a *community* organizational form (referring to the organizational principles presented above), the resulting combination can be characterized as a *hybrid form*. Similarly, where providers commence on a profitable and sustainable path and the community is voluntary and socially based, tension emerges in their relationship. Conversely, when the provider and the platform follow the same organizational format a non-hybrid form is the

result. Hybridism is characteristic of the most successful strategies in terms of sustaining infrastructure. However, non-hybrid forms (which is the case of the "informal" type of provision seen in the assemblarian self-provision model) are weaker. Previous studies on the FLOSS case have confirmed that the most successful OCCs follow hybrid infrastructure governance forms (Lanzara & Morner 2003, 2006). However, hybridism also results in tensions between the contrasting approaches of the provider and the community: tensions between a representative democratic logic versus a participative democratic logic or tensions between profitability versus social base, or both, are present in hybrid OCCs.

Time is required to assess whether the success of hybridism is a transitional moment or can be considered as a suitable form in the emerging digital environment. In Bimber's view (2003) the consequences of this hybridization remain to be seen, but it though light on the limits of extreme post-bureaucratic political association. However, as Clemens (2005) states, *"hybrid forms suggest possibilities of innovation but (hybrid forms could also be) problematic mutations or simply sterility"* (p. 353).

Olson (1965) has pointed to the importance of formal organization as one means to overcome collective action dilemmas. In order to see if Olson's conclusion applies to OCCs, it is important to recall the distinction between organizational strategies for infrastructure and organizational strategies for collective action in the platform. In light of this statistical part of the analysis, it could be argued that formal organizing is a source of success in terms of infrastructure governance. This would reinforce Olson's conclusion. However, the in-depth analysis of the case studies reveals that the formalization path is not a one-way evolution. The cross-temporal analysis of Wikipedia indicated a first evolution towards professionalization and formalization in infrastructure provision; however, once some provision functions were stabilized and guaranteed, the Wikimedia Foundation entered a stage of major experimentation. In this regard, Wikipedia only followed a formalization path to a certain point, and then returned to informal experimentation. Yet formal organizing is not a characteristic of the evolution of OCCs' platform organizing, which challenges Olson's (1965) conclusion. As OCCs grow, there is a tendency to stabilize a set of rules and governing bodies of the community (O'Mahony & Ferraro, 2007). However, they remain low profile. In this regard, OCCs are scale-free in the principles of openness, decentralization, and doography. This principle remains central in the evolution of OCCs independently of the size of the community. Additionally, further formalization in the organization could create an obstacle to possible interaction in platform settings. In this regard, OCCs are based on a separation of functions that requires more formal organization in some areas more than others. This equilibrium in terms of combining formal and informal organizing seems to form the essence of the larger and more collaborative OCCs more than the mere adoption of formalization paths in Olson's (1965) terms.

Previous research paying attention to infrastructure governance is very limited. However, O'Mahony (2007) has made important contributions to one of the models of infrastructure

governance, namely *community management*. O'Mahony previously researched the governance of FLOSS communities via case studies based on the autonomous representation foundation model (2007). She characterizes the foundation model as *community management.* In O'Mahony's terms a community-managed FLOSS is "a distributed group of individuals developing open source code with the support of the Internet that is independent from employment relations, pluralistic, and fostered by decentralized decision making and autonomous representation" (O'Mahony, 2007, 10). Similarly to O'Mahony's characterization of foundations in FLOSS projects, my characterization of the foundation model also points out the latter's representational character which defines its openness to community involvement, following community interests, and choosing the foundation according to a representative election. O'Mahony points out that the notion of *community management* was the original governance model of FLOSS cases. However, it has become separated from the notion of the FLOSS organizational model (meaning OCCs' organizational characteristics). The author states that there are many successful variations of FLOSS governance that do not rely upon *community management* (Markus, 2007; O'Mahony & West, 2006; Shah 2006). Recently more private sponsors and hybrid governance models have emerged in FLOSS communities (O'Mahony, 2007). However, the author leaves the question of the characteristics of governance models other than the *community management* model, and the degree to which *community management* can be applied to types of providers other than foundations open. According to my research results, I can empirically confirm the author's suspicions. Mission enterprise and assemblarian self-provision models follow the same commons governance models as the original foundation; however, the corporate service provision model follows a contrasting, and in some degree opposite, corporate logic.

This research is also original in addressing the uncommon question of **power** in collective action (della Porta & Rucht, 2010). Within the framework of this research, power is regarded as embedded in OCCs' institutional infrastructure governance (Castells, 2009). Although Castells has pointed to several sources of power in the network society, he did not fully consider the role of infrastructure provision. This analysis contributes to Castells' work by adding the importance of infrastructure provision as a fundamental source of struggle and power in the digital era. As I will argue in a following section, the emerging institutional logic that frames the relationship between infrastructure providers and contributors (individually, but more importantly collectively) can, in my view, give us insights into political institutions in the digital era.

This research proposes a formula for empirically analyzing power in OCCs by mapping the distribution of sources of power between the infrastructure provider and the community. Earlier research on OCCs has indicatedd the particular form of ownership present in OCCs (Weber, 2004). This analysis was supported by this early research on ownership within OCCs. However, to analyze power within OCCs, I consider not only the distribution of ownership, but also the distribution of functions and authority as relevant to the discussion. In this regard, three aspects were considered in the analysis of the types of powers and asymmetries in terms of the power held

by the provider vis à vis the community. First, function distribution—who does what. Second, authority distribution—who has authority over what. And third, ownership distribution—who owns what.

In OCCs two senses of power are present: power for and power over. Power for refers to the power to accomplish a mission, a resource that supports the doing of something, or a tool that allows a move. Power over refers to control and domination in order to direct and force an action, involving asymmetry between those with power and those over whom power is exercised. The analysis of the types of powers and asymmetries in power of the providers vis à vis the communities comparing the corporate and commons-oriented logics reveals that there is a sharp distinction of power distribution between the two. Commons logic is based on a major empowerment of the community in terms of community self-governance and in autonomy and freedom from the infrastructure. The corporate logic is designed to empower the providers. The community lacks power in corporate governance models in several senses: the control of the corporation over participants' behavior in the platform, the dependency of the participant on the platform in order to access and reuse their works and the non-enforcement of a collective frame. In other words, in corporate-driven models, participation does not lead to power.

However, in both types of logic, the dependency of the provider on the community as *prosumers* (product consumer or professional consumer) or content generators limits their power. Participants are not employees, and the providers do not have a direct source of power over their volunteers that allows them to dictate their actions.

Nevertheless, a distinction is present in terms of power for versus power over in the two logics. In the corporate logic, the provider controls the community and restricts the community's autonomy from the infrastructure; these constitute two sources of power over the community. Conversely, in commons logic, the power that providers hold lies in being able to accomplish or provide something for the community, rather than in the ability to dictate their actions. Providers in commons models do not have control over the community as the community is self-governed and can become independent from the provider. Additionally, providers depend on the trust of the community to fulfill their role.

In conclusion, in commons logics, providers have limited power over the community. The power that they do have is a power to provide support to the community in order to accomplish the mission. Where authority is shared equally among the community and the provider and the community is not subject to a hierarchy (nor in the centre) this points to a relationship between the providers and the communities framed by a commons logic. Other authors have suggested a similar argument, proposing the concept of lateral authority. Some scholars have predicted that network oriented forms rely less on traditional vertical authority and more on lateral authority to achieve collective outcomes (Barley & Kunda, 2001; Daft & Lewin, 1993; Miles & Snow, 1986; Powell, 1990; Romanelli, 1991). However, little attention has been devoted to how lateral authority differs from prior conceptions of vertical authority (O'Mahony, 2007). According to O'Mahony and

Dahlander's (2008) analysis of FLOSS foundations, lateral authority rewards providers with greater authority over collective work, even though they do not gain authority over individuals. Contributors remain free to work on the areas that are of interest to them and to withdraw from the project at any time (O'Mahony, 2007; O'Mahony & Dahlander, 2008).

Finally, a major characteristic of the power embedded in infrastructure governance is its distributed character, which creates mutual dependency between the power sources. As I previously suggested in the discussion on eco-systemic participation, power in OCCs adopts an eco-systemic form. The distribution of functions, authority, and ownership between the providers and the participants in commons logic models generates an eco-systemic mutual dependency between them. In this regard, I suggest the concept of parallel co-governance to refer to a form of governance in which both provider and community play a role and mutual dependency is formed between them.

The results of this research also engage with another body of literature that addresses the relationship between democratic organization and size (and complexity). Previous literature on the question of size and democratic organization tends to oppose increases in size to democratic organizing. Historically, local and small communities have better conditions for democratic organization.

Classical political economy theory highlights the major difficulties of coordination and collaboration as more participants become involved in collective action (Hardin, 1968; Olson, 1965). Although Olson proposed that small groups are more successful than larger ones (1965), more recently Lupia and Sin (2003) have challenged this proposition. In the case of OCCs, most authors tend to suggest that OCC organization favors the scaling of collaborative collective action (Benkler, 2006; Shirky, 2008; Weber, 2004). Traditional collective action theory has focused on addressing the *free-rider* problem to explain the sustainability of collaboration. In the analysis of participation in OCCs, I argued that free riding and the fact that a large percentage of people do not contribute do not necessarily constitute a problem for accomplishing OCCs' common goals. OCCs are successful - under certain conditions - in solving the problem of free riding. However, my interest is not focused on the free rider problem, but on how increases in size affect the persistence of democratic principles. In comparison to other forms of collective action based on participative principles, OCCs substantially increase the number of people involved in the common activity. However, it remained doubtful that OCCs would retain democratic principles as they grew in size. In other words, online environments facilitate the growth of the size of the collective action, but what happens concerning the traditional tension between size and democratic organizing? From this research a complex picture emerges.

Larger OCCs follow corporate logic, which implies that they are based on community involvement in their infrastructure provision and on major dependency (instead of freedom and autonomy) on the infrastructure provider. Larger OCCs are not self-governing, but depend on the infrastructure provider to govern interaction in the platform. However, considering other aspects of

democratic quality, corporate OCCs are significantly more inclusive than commons ones, in that they have better technical and informational usability and accessibility. Plus, they tend to be more transparent in terms of knowledge policy. In contrast, smaller OCCs follow a commons logic, which implies that they are based on the involvement of the community in infrastructure provision, freedom and autonomy of the community, and self-governed community interaction. In conclusion, there are some aspects associated to democratic organizing that are favored by larger communities (inclusivity and a specific form of transparency); however, those aspects linked to infrastructure governance are not favored by larger communities. In other words, there is no clear tendency that corporate OCCs are less democratic in terms of all the aspects considered in contrast to commons OCCs. However, the results of this research tend to confirm the previous literature in that size is in tension with more democratic organization (Michels, 1962; Weber, 1946). However, OCCs are a particular case in terms of how they are able to retain democratic principles when facing complexity.

The literature on democracy and complexity traditionally concludes that democratic organizing is in tension with complex agendas and processes (Michels, 1962; Weber, 1946). This research on OCCs contradicts this intuitive relationship between democracy and complexity concerning infrastructure governance. A more complex common agenda of collaboration is achieved with a commons logic, whereas a less complex goal of collective action and collaboration is developed within the corporate logic. In other words, the more complex the collaboration involving the community, the more self-governance and community control and freedom are required. Other recent empirical research has provided evidence regarding the conditions where complexity does not result in a decrease of democratic quality, but is accompanied by more participative forms (Doerr, 2009; Polletta, 2002). This research corroborates these previous insights in the case of OCCs.

In summary, in terms of size, the research results tend to confirm the proposition that size and participative democracy are in tension. However, in terms of complexity, more community-driven governance is present as goals become more complex (that is, the collaboration involves more complex activity).

OCCs question several of the reasons suggested by Michels (1968) to explain the iron law of oligarchy.282 Among these is the general immobility and passivity of the masses. In this line, in OCCs it is common for around 90% of those who visit a site to not intentionally contribute. However, in OCCs the *passivity* of large parts of the communities does not necessarily lead to increased oligarchy in the communities to the same degree as in representational and centralized forms such as political parties.

Michels pointed out the technical indispensability of leadership, however, OCCs are able to coordinate their actions through their environments and architecture design more than through

282 The technical indispensability of leadership, the tendency of leaders to organize themselves and consolidate their interests, the gratitude of the led towards the leaders.

specific and differentiated roles fulfilled by physical people. In Michels' view the effective functioning of an organization requires the **centralization** of power in the hands of the few — as decisions cannot be made efficiently by large numbers of people. In OCCs, large percentages of participants do not contribute, but OCCs are characterized by the tendency to increase in size in terms of participants who contribute actively in a participative manner without high levels of centralization. Importantly, the decentralized character of OCC community platforms allows large levels of participation to be hosted without the need for more hierarchy, which a centralized organization might require in order to handle large groups. Hierarchies in OCCs are present; however, they are secondary when considering the very large amounts of people involved. Although OCCs involve larger numbers of people, they generate lower levels of bureaucratization in the form of formal hierarchy. Additionally, hierarchies present in OCCs are rooted in a different nature. Hierarchies in OCCs are based on trust and reputation more than obligation and the capacity to sanction others (Stalder & Hirsh, 2002).

In addition, both Michels and Weber state that bureaucracy promotes the centralization of power in the hands of those at the top of the organization (Leach, 2005). However, the **sources of power** in OCCs lead to their wide distribution and the creation of mutual dependencies and parallel authorities more than hierarchical authority. Michels and Weber state that leaders are motivated to preserve their own power and position. This could be the case for OCCs, but a study centered on leadership in OCCs could throw more light on this. However, from this research it appears that leaders in OCCs act with a limited capacity, as power distribution is one of the characteristics of OCCs. Furthermore, their positions are maintained more by their charisma and reputation than their capacity to punish or compel others.

Another important reason given by Michels is that **delegation** is necessary in any large organization, as many members cannot make decisions and organize activity via participatory democracy. However, the OCCs are not based on a separation between decision-making and the delegation of implementation. In other words, delegation is not present in OCCs; neither the delegation of decision-making (as previously pointed out the decentralized character of OCCs facilitates participative decision-making), nor delegation of implementation. In Michels' terms, delegation is connected to the collective psychology of groups of people feeling the need to be led. Delegation also leads to specialization — to the development of knowledge bases, skills and resources among the leadership — (which further alienates them). However, OCCs are based on the principle of inclusiveness and openness to participation. Through the modular organization of their activities, an architecture of participation (connected to mechanisms of usability and protocols) which facilitates openness to participation and norms of welcoming newbies, OCCs are based on principles of maximizing affordable and equally accessible participation, more than specialization and differentiation.

Some of these aspects which question Michels' iron law coincide with another exception to the law, the International Typographical Union (ITU) (Lipset, 1956). Lipset suggests a number of

factors that existed in the ITU that are allegedly responsible for countering the tendency to bureaucratic oligarchy. The ITU had a number of large, strong, local unions who valued their autonomy.283 The major autonomy given to participants both individually and collectively in OCCs, in contrast to other organizational forms, could also be a reason why OCCs question the iron law of oligarchy. A second reason suggested by Lipset for the ITU's non-conformity with the iron law of oligarchy is the major decentralization of power. The existence of factions helped check the oligarchic tendencies that existed at the national headquarters. Leaders that are unchecked tend to acquire large salaries and a more affluent lifestyle that makes them unwilling to go back to their previous jobs. In OCCs, a major decentralization of power is also present. Additionally, the founder and the administrators, that is those in hierarchical positions, not only do not receive any remuneration for their work, but have to assume the costs of their participation. In this regard, Jimmy Wales, founder of Wikipedia, regularly underlines the fact that he pays the costs of his involvement (in terms of travel costs for his representational role for example).

Finally, according to the research results presented here the transformation of organizations towards greater oligarchy or the concentration of power as suggested by Michels is not the only possible path of transformation. OCCs suggest that greater formalization does not always apply to OCCs, but that successful OCCs tend towards hybrid forms, with a dynamic formalization of infrastructure provision (with stages of greater formalization followed by stages of minor formalization), and scale free community organizational principles at the platform level. In addition, the case of the social forums threw light on another path of transformation of organizations, disappearance. My research analyzed the disappearance of the openesf.net platform, founded in 2008, in 2010. The analysis was centered on the infrastructure provision strategy. However, there may be other aspects which contributed to the disappearance of openesf.net. The fact that openesf.net was connected to a larger goal, the social forum mobilization process, could also explain its evolution over time. For example, the cyclical character of the social forums may mean there is no aim to preserve activity over time. In this line, Zald and Ash (1966) suggest organizational disappearance (linked to goal transformation) as an alternative transformation to those of Michels and Weber for social movement organizations. Zald and Ash also suggest other possible transformation paths for social movement organizations (in response to external environmental factors as well as internal processes) such as coalitions with other organizations, increased rather than decreased radicalism and factional splits (1966, p. 328).[284] With regard to the latter, OCCs also throw light on the phenomenon of "forking", that is where

283 This local autonomy was strengthened by the economy of the printing industry, which operated in largely local and regional markets, with little competition from other geographical areas. Large local branches continued to jealously guard their autonomy against encroachments by international officers.

284However, Zald and Ash (1966) concentrate on questioning Michels' and Weber's classical assumptions with regard to goal transformation towards more conservative goals and organizational maintenance. My analysis is instead centered on questioning Michels' and Weber's assumptions on the oligarchization of internal authority structures,

communities part ways with providers, thereby demonstrating their autonomy, in order to move in an alternative direction, as a possible transformation of OCCs.

Additionally, this research also delineates the limitations related to the dimensions of democracy used in web analyses of unconventional political actors (della Porta & Mosca, 2006; Navarria, 2007; Sudulich, 2006; Van Aelst & Walgrave, 2005; Vedres, Bruszt & Stark, 2006). Web analyses of political parties and public institutions illuminated the study of the democratic qualities of unconventional actors (Davis, 1999; De Landtsheer, Krasnoboka & Neuner, 2001; Gibson, Nixon, & Ward, 2003; Norris, 2003; Römmele, 2003; Trechsel et al, 2003), as did the literature on the democratic quality of the nation state (Berg-Schlosser, 2004; Bollen, 1990; Bollen & Paxton, 2000; Diamond & Morlino, 2004; Morlino, 2004; Munck & Verkuilen, 2002). In my view, the set of dimensions of democratic quality used for analyses of unconventional political actors are more adapted to an organizational logic of representation than an organizational democratic logic which is not representational as is the case for SMOs, NGOs or OCCs. In this regard, I consider that the dimensions of democratic quality must be adapted to an organizational democratic logic that is not representational. In light of my research, I suggest a set of dimensions of democratic quality based on the empirical cases. These involve both community interaction and infrastructure governance.

The first dimension of democratic quality in OCCs is access to participation. The accessibility of participation (and access to information and knowledge) is connected to equality in openness to participation and to inclusion and the reduction of barriers. This is very much connected to facilitating the usability of the space and the creation of a welcoming culture where newbies are welcomed by those with more experience, who help them to acquire knowhow on the community and the platform. However, it is important to highlight that accessibility does not imply equal participation, but equal access. There is no expectation that everybody that participates will participate equally. This dimension points to the idea that the value of equality, central to the traditional left wing, is being replaced by the value of freedom to share and autonomy to decide when and how information is shared.

The second dimension is organizational transparency. From the analysis of OCCs regarding transparency as understood in a representative form, the results indicated that OCCs perform poorly in terms of transparency. However, transparency in OCCs has been reshaped. OCCs value organizational or social transparency. This is related to public organizational processes and the data generated by them being publicly accessible. In conclusion, transparency in OCCs is valued, but not in line with a traditional idea of transparency. Third, OCCs value *doocracy*. Doocracy refers to the idea that there is no external body or hierarchy that decides how actions should be carried out. In other words, in a doocracy authority over an action is held directly by those developing it. Furthermore, participants gain influence and authority in the process according to their merits and the resources for ‘doing’ that they mobilize (such as time or attention). Fourth, OCCs value the representation of community interests by the provider and control over

286 I owe this point to the insights of Prof. Donatella della Porta.

infrastructure governance**.** Finally, the infrastructure governance of OCCs is based on the autonomy and freedom of the community. In my view, autonomy in network-oriented forms appears to be replacing the values of representative democracy. In this line, O'Neil (2009) has suggested that autonomy has become the central value on the Internet. In a previous empirical analysis of four cases, O'Neil concluded that the principles of autonomous charisma (meritocracy) and democratic sovereignty structure online authority. However, O'Neil did not consider these principles to be related to infrastructure governance, but to community interaction.

Applicability of the research results to other types of collective action

The organizational characteristics (and democratic conception) of OCCs display some degree of adaptability to the digital relational environment. This environment is shared by other types of contemporary forms of collective action. In this regard, some of the findings corroborate previous research on other types of collective action.

Previous research on the GJM also highlights organizational principles of openness to participation and decentralization (della Porta, 2009), flexible boundaries (Bimber, 2003) and a network-organizing ethos (Fuster Morell, Vergel, Juris & Duran, 2005). Castells points to the network as the archetype of the network era (Castells, 2000). The decentralized character of this emerging collective action form opens up a debate on the risks of fragmentation, which is causing a crisis in traditional conceptions of public space. OCCs are based on a form of collective action that involves coming together in a decentralized way in which a shared minimalist mission, the use of a common space, a meta data frame and protocols of participation create collective action, while previous forms flag the creation of a centralized point of unification. In other words, the "glue" of collective action in OCCs appears to be in sharing rather than unification and homogenization. Additionally, most OCCs are based on individual participation. However, this rise in individualism is a challenge to the idea (present among left-wing sociologists and some parts of social movements such as communists) that individualistic types of cultures tend to produce ideologies of success and a tendency to individual achievement. These groups also resist the perception of positive effects of individualism in terms of commitment and political engagement.286 OCCs form a case that reinforces a different reading, that is, individual participation and autonomy from the collective can result in collective outcomes. However, the resulting outcome depends on whether the institutional frame of the collective action is based on a commons logic or a corporate logic. While commons logics lead to collective action based on a collective result, corporate logics lead to individualistic, synergistic outcomes.

Their individual participation bases and the fact that they highlight the importance of access to participation more than equal participation are features which contrast OCCs with the more traditional sectors of the GJM and explains, in part, their reluctance of the latter to embrace online platforms of participation, as emerged from the analysis of the social forum case. However, there

are also sectors within the GJM that have adopted Wikipedia and FLOSS organizing as an inspiration and have reviewed their own organizational principles as a result. In this regard, the organizational characteristics of participation in OCCs are also evocative of the most innovative forms of social movement organizing, which build online platforms as reference points for collective action. This is the case for example of Avaarz.org and Moveon.org, platforms for political campaigning (I. Hogue (Moveon.org), Interview, November 20, 2009; P. Hilder (Avaarz.org), Interview, November 20, 2009). This points to a major change in forms of claim-making.

My research on OCCs sheds light on an organizational characteristic only weakly highlighted in previous research on social movement theory. OCCs have an "implementation" character and goals of knowledge production. In particular, OCCs take advantage of NTI to develop the dimension of social movements as generators of knowledge, which was also present in previous social movements. However, the literature on social movements has not dedicated much attention to the link between social movements and knowledge. Social movement theory initially tended to approach social movements from a protest perspective, and defined their impacts in terms of nation state political institutions. Yet a narrow conception of social movement expressions and outcomes has prevented researchers from realizing the promise of social movements (Giugni, 1998).[287] In this regard, this research on online creation communities stresses some challenges already present in social movement theory: it highlights the performative dimension of social movements (not linked to protest) and expands the conception of social movements as challenges to socio-cultural organizational logics and modes of knowledge production. Snow, Soule and Kriesi (2004) suggest we consider social movements, *"as challengers to or defenders of existing institutional authority—whether it is located in the political, corporate, religious, or educational realm—or patterns of cultural authority, such as systems of beliefs or practices reflective of those beliefs"* (p. 9). This can lead to the construction of alternative systems of production (Carroll & Swaminathan, 2000; Melucci & Moore, 1996; Frickel & Gross, 2005; Rao, 1998; Schneiberg 2002). OCCs are part of a broad movement still in its early stages, the free culture movement. At the movement level, there is a combination of, on one hand, a strategy of protest and lobbying to contest policy outcomes, and, on the other, a strategy of building digital commons. In other words, the protest dimension is also present in the FCM. However, the performative dimension and the challenge of knowledge production for OCCs has become more visible and prominent than in other movements.

Applicability of the OCCs organizational characteristics to institutions in society

In a context in which the institutional principles of both the nation state and the private market are in a state of crisis, OCCs and their distinct organizational characteristics could provide

287 Furthermore, a focus on protest risks an incomplete understanding of how cycles of contestation evolve. Contestation is not likely to remain constant; it could mean mobilization and then transformation.

insights into the reform of the institutional logics of both. In this line, some authors argue that the provision of infrastructure for OCCs is the basis of the one of the main innovations of capitalism (Chiapello & Boltanski, 2005; Formenti, 2008 Moulier-Boutang, 2007; Tapscott & Williams, 2007).

In terms of political institutions, Crouch suggests that the post-democratic era is not related to less democracy, but an adaptation of the institutional logic of democracy to a postindustrial environment (2004). OCCs could be a source for expanding the political imagination in order to overcome the crisis of the political institutions and approach emerging organizational strategies. Particularly, OCCs could be a source of inspiration in terms of handling the increase of size to the global dimension, the formation of a knowledge-based society and the complexity of the political agenda.

The globalization and glocalization of processes of various dimensions, and the reconfiguration of the global geo-political forces, together with the increase of levels of education (and access to information and knowledge), particularly in the North; the development of a post-industrial economy toward the increase in importance of immaterial production and the emergence of a knowledge-base economy; the changes in the matrix of costs of collective action (linked to the new possibilities of communication and aggregate common interest facilitated by the new technologies of information, among other reasons); all these diverse processes are opening a debate of reformulate the global institutions toward governance forms that could better respond to the new global context. In the discussions of global democracy some insights suggest the evolution from institutions of representation to commons governance (Ostrom, 1990). This is the case in the governance of diverse resources, such as natural resources like water or the Amazonia, or global problems, such as climate change (Endres, Sprain & Peterson, 2009),. The governance of the Internet is also an example towards the experimentation on a model of stakeholders which integrate the diversity of the parties in the process, and which adopted a consensus decision-making (Vertola, 2007). In this regard, the organizational logic of the governance of digital commons, constitutes an example of a governance solution for processes without clear boundaries and fluid forms of belonging, with multiple parties to integrate, and in decentralize settings.

The governance of OCCs and digital commons, as processes around the building and management of knowledge-making, could provide also insights on the governance of a knowledge-base society. The scientific communities are an example to point towards the recognition that *communities of collaboration* facilitate the environment for creativity and knowledge production.

In the direction to expand the set of political solutions, there is a growing body of research literature on how NTI could be used as a channel to reinforce the current organizational form of political institutions, for instance through the adoption of online voting (Trechsel, 2007). Importantly, an incipient reflection is emerging in terms of how OCCs' organizational principles could be adopted for radically transforming the organizational form of political institutions (Noveck, 2009).

In the light of this research on the governance of OCCs, an image of political institutions based on organizational transparency and open to citizens' control, representatives of citizens interests and sovereignty, emerges. However, their role is reshaped. Political institutions can be seen not as delegates who implement the political agenda, but providers and facilitators of the infrastructure required for citizens to decide and implement the political agenda. Citizens activities involve freely deciding the policies to define their own interaction, and they are managers of their common wealth, which is collectively owned and non-exclusive. Furthermore, the boundaries of the political space are not defined in terms of territorial exclusion, but by a free and autonomous decision to take part and contribute, leaving the possibility to *leave* or to belong to several communities at the same time.

This image appears challenging to the current political system. Furthermore, a major analysis of the pros and cons, and the risks involved in adopting the OCCs' organizational principles for political institutions is required. For example, the rationality of the process could be corrupted by private interest.

Moving to a more concrete line of applicability, a major political implication is associated with the emergence of a commons paradigm for managing collective resources (Ostrom, 1990), of which the digital commons is only one of several examples (Bollier, 2009; Hess & Ostrom, 2007). Digital commons can be supported and regulated, as political institutions do the market. In this line, public institutions give resources to OCCs. For example, the German National Archive uploaded nearly 80,000 historical photographs to the Wikimedia Commons[288] and Flickr has received material from the Library of Congress.289 Additionally, there are two other main areas of democratic innovation which evoke OCCs' organizational principles: increased participation and increased transparency.[290]

Concerning participation, some authors agree that representative democracy could move towards a more participative democracy (della Porta, 2009). Particularly in Europe and Latin-America, experiences which go in this direction are emerging. The experiences of participative budgeting in Brazil are a prominent empirical example of the incorporation of more participative mechanisms into political institutions (Röcke, 2009). Another example is the interactive or network governance in Scandinavian countries with its participative decision and policy making (Sørensen & Torfing. 2007).[291]

288 Source Wikimedia Commons webpage. Retrieved May 27, 2010 from http://commons.wikimedia.org/wiki/Commons:Bundesarchiv

289 Source The Commons section in Flickr. Retrieved May 27, 2010 from http://www.flickr.com/commons

290 Finally, considering the dramatic situation in terms of the freedom of movement and migration. It appears more challenging to find empirical experiences of political institutions considering an idea of belonging that is open to the possibility of citizens freely deciding to take part and/or "leave".

291 Other examples of adoption of participative forms in other continents are the local governance councils in Chicago and the devolution of development decisions in India, or the City of Melbourne's collaboratively written city plan.

However, the participative character of OCCs success goes a step further. The question is not only about developing more participative forms at the level of decision-making, but more importantly, at the level of the "implementation" of the political agenda and the functions of the political institutions. Additionally, empirical research has pointed out that the meaning of ownership in the participative process of decision-making is reduced to the "metaphoric" meaning of having the impression that the actors involved are part of the process (Casula Vifell, 2009)**.** However, in OCCs, the meaning of ownership is relevant in all its dimensions. Citizens with control of the public wealth. Ultimately, citizens do not become "talkers" but "doers". In this regard, the figure of the "volunteer" who helps in catastrophes, or NGOs adopting part of the social agenda, is increasing in society and evokes the argument of the major force of citizens as doers or implementers. The externalization of some of the functions of political institutions has been a process that is part of the reorganization of political institutions in the globalization process. Generally, this externalization has moved in the direction of a privatization of public services, and the reduction of the dimension and role of the state in line with the neoliberal agenda. However, OCCs show that a corporate logic is not the only way, that a commons logic could drive such moves towards enlarging citizen involvement in the implementation of the political agenda, gaining major empowerment and control over the process.

Another transformation of the political institutions that evokes OCCs' organizational principles, in this case mainly in the USA, is the increased claims for transparency of the political institutions. The transparency movement or open government movement in the United States argues for major transparency (particularly concerning lobbying activities) in the political institutions in order to reduce corruption. However, the meaning of transparency is reshaped in coherence with the concept present in OCCs. Transparency does not refer to specific moments, with delegates/representatives "reporting" back to their electorate. It involves, on the one hand, a more continuous public "organizational" process of the political institutions, and on the other hand, making the information generated in the political process available to the public for elaboration by the citizens. For example, making the data public on the locations where cyclists have been killed in a city will allow citizens to develop useful and innovative applications, such as the systematization of the data (through online volunteering) into a visual map that could contribute to a better design of streets and cycle paths.

The findings on OCCs in the broader context

OCCs are a sign of the reinforced role of civil society and favor a more participative public space. The other side of the coin here are the risks. As Rodotà points out, beyond the specific case of each OCC, there are some society level preconditions and an appropriate regulation that is required in order to assure a democratic use of the Internet (Rodotà, 2004).

First, the problems of the digital divide frame the OCCs. In order to access participation in an OCC, citizens must first have access to the Internet. Furthermore, the autonomous character of participation in OCCs suggests that participants are able to contribute according to their own resources of time, skills or money. According to the civic voluntarism model (Verba, Schlozman & Brady, 1995), resource-rich participants with free time, skills, money and connectivity can contribute more easily than those without. Thus, the resource-rich tend to be disproportionately represented among participants. In this regard, participation in OCCs risks reproducing the social and economic inequalities present in society. For example, my study of the gender distribution of participation in the case of openesf.net showed that only 36 percent of the active participants were women; a lower percentage of 32 readers were women; while a percentage of just 13 of women contributors has been observed in previous research on Wikipedia (Glott, Schmidt, & Ghosh, 2009). Ensuring that citizens have equal resources to access and participate in OCCs constitutes a key precondition for a democratic frame of OCCs and the use of NTI as a whole.

Second, a major debate with regard to privacy rights is opened up by the use of NTI. Thirdly, NTIs allow exhaustive control of data and sophisticated marketing (Calenda & Lyon, 2007). Rather than strengthening the presence and participation of the citizens in collective affairs, the use of NTIs could end up reinforcing the control and authority of institutional elites (Subirats, 2002). Additionally, most major infrastructure providers of OCCs are based in the USA. The major control of USA players over online infrastructure for collective action could interfere in the geopolitical landscape in terms of reinforcing a hegemonic cultural domination and communicative control.[292]

Finally, the lack of an online infrastructure provided by public institutions to support online interactions, replaced by the building of an online infrastructure, including key pieces for Internet functioning (such as search engines) by private multinational companies, could end by increasing the privatization of the public sphere. Furthermore, authors points out that commercial providers of infrastructure are using (free) labor which would require regulation (Terranova, 2000, 2004; Weigend, 2008).

Related to the above and for other reasons, the control of the participants over the data generated in their interactions through OCCs and, more generally, to assure a space for civil society's provision and control of the infrastructure that supports collective forms and online communication emerges as central for guaranteeing the independence of civil society. Additionally, as the OCCs' role as managers of digital commons available as public goods is consolidated, there is the need to develop formulas for their accountability and social responsibility.

Due to its novelty, there is a lack of regulation on the role of the infrastructure provider and a need to adapt the current legal forms to the functions of infrastructure provision.[293] In this line, a

---

292 The United States is an appropriate base for providers of online infrastructure because it offers legal protection in terms of providers' liability, funding benefits to encourage innovation (Venture capital) and Silicon Valley constitutes a node of expertise.

293 It is worth mentioning several innovations that are taking place in terms of legal forms that are more appropriated to the provision of infrastructure for OCCs. A relevant example is the Participative Foundation designed by the notaries Pierre Lombardo and Belleza (2006). Participative Foundation is used in a citizens

regulatory framework is expected to be developed. Whether the global, regional and local political institutions will favor a regulation of infrastructure providers that reinforces a commons logic or a corporate logic is at stake.

Future Research

I believe that several aspects of this study would benefit from more research. First, it would be useful to develop a trans-temporal analysis comparing growth and governance and how these evolve over time. This would allow a more precise analysis of how growth is connected to governance. Wikipedia is a very interesting example for analyzing how the dialogue between global and local dimensions is built over time.

Secondly, one observation that emerged from my analysis is that there is an unequal distribution of participation in OCCs (the 90/9/1 principle). The reasons for which some members of online communities do not participate could be related to a phenomenon of multiple-belonging. According to Berners-Lee (2007), there is a recurrent pattern that affects how individuals distribute their belonging among groups of different sizes. Further research would be required to verify this hypothesis. This additional research might require the adoption of field-level and individual-level analyses rather than the case-centric analysis presented in this research. Furthermore, I believe that an analysis of participation is required in order to further develop the eco-systemic participation approach, which integrates and considers the different forms and degrees of participation.

Third, research on free culture and masculinity could shed some light on why there is a large imbalance in gender participation in OCCs and the free culture movement at large.

Fourth, it is both academically interesting and politically urgent to develop policy-oriented and movement-oriented research. In light of my research, it may be predicted that in the coming years major mobilizations will take place around free culture issues. In this regard, developing field-level research on the mobilization processes linked to the free culture movement could help us to understand the evolution of the conflict between a commons logic and corporate logic highlighted here. This could require the analysis of theories and practices of the Free culture movement, explaining how those visions and practices are shaped by the institutional context of political opportunities.

Finally, research oriented to defining innovative legal formulas for platform provision which increase community control over provision bodies while guaranteeing the legal liability of the provider could help to support the further development of commons logic (see Bellezza & Florian, 2006). In the same direction, further exploration and analysis of the research data on economical

---

initiative in Milan (Participami.it) and it is based on an infrastructure governance that combines the support of public entities, private sponsors, technical expertise and representatives from the community of participants. Other example is Swiss law the adaptation of Swiss law to recognize a group of people interacting online with a shared non-commercial purpose.

sustainability models of online infrastructure would also be helpful in reinforcing the independence of OCCs.

This research could continue along several paths. It began and was concluded in times of far-reaching changes, crisis, and transition. This research started to strategically understands the ongoing changes. My research sheds light on a conflict over how and where the digital era is headed: ultimately a conflict between visions of us as a collective. How this conflict will be solved depends on us. I now wish to translating the above research results into online political action.

Chapter XIII

Bibliographic references

Abramsky, K. (2001). *Restructuring and resistance: Diverse voices of struggle in western Europe.* London, UK: Resresres.

Aguiton, C., Cardon, D., Castelain, A., Fremaux, P., Girard, H., Granjon, F.,..., Ziemlicki, C. (2009). Does Showing Off Help to Make Friends? . Experimenting a Sociological Game on Self-Exhibition and Social Networks . *Association for the advancement of articficial inteligence.*

Allan, J. (2003). Inclusion, Participation and Democracy: What is the Purpose? (Inclusive Education: Cross Cultural Perspectives) (Paperback) . Retrieved from http://www.amazon.com/Inclusion-Participation-Democracy-Inclusive-Perspectives/dp/1402012659 .

Amenta, E., & Caren, N. (2004). The legislative, organization al, and beneficiary consequences of state-oriented challengers. In Snow, D. A, Soule, S. A. & H. Kriesi (Eds.). *The Blackwell Com panion to Social Movements* (pp. 461–488). Malden, MA: Wiley Blackwell.

and Global Politcs. Solidarity Beyond the State. New York: Syracuse University Press

Anderson, C. (2009), *Free the future of a radical price*. New York, NY: Hyperion.

Andretta, M. (2003, December 3-5). *International activists: From shared ideas to collective identity. The case of the first European Social Forum*. Paper presented at the conference Les mobilizations altermondialistes, Paris, France.

Andretta, M., & Doerr, N. (2007). Imagining Europe: Internal and External Non-State Actors at the European Crossroads. *European Foreign Affairs Review 12, (3)*, 385-400.

Andrews, D., Nonnecke, B., & Preece, J. (2003). Electronic survey methodology: A case study in reaching hard-to-involve Internet users. *International Journal of Human-Computer Interaction, 16*(2),185-210.

Angermeier, M. (2005). *The huge cloud lens: Bubble map web 0.2.* Retrieved from http://kosmar.de/archives/2005/11/11/the-huge-cloud-lens-bubble-map-web20/

Angwin, J., & Fowler, G. A. (2009, November 27). Volunteers log off as Wikipedia ages. *The Wall Street Journal.* Retrieved from http://online.wsj.com/article/SB125893981183759969.html

Anthony, D., Smith, S.W., & Williamson, T. (2007). The Quality of Open Source Production: Zealots and Good Samaritans in the Case of Wikipedia. Dartmouth Computer Science Technical Report TR2007-606, September 2007.

Anthony, D., Smith, S. W., & Williamson, T. (2009). Reputation and reliability in collective goods: The case of the online encyclopedia Wikipedia. *Rationality and Society, 21,* 283-306. Retrieved from http://rss.sagepub.com/cgi/content/abstract/21/3/283 doi: 10.1177/1043463109336804

Antonelli, C. (Ed.). (1992), *The economics of information networks*. Amsterdam, The Netherlands: Elsevier.

AOL. (2010). In *Wikipedia, the free encyclopedia*. Retrieved December 19, 2010 http://en.wikipedia.org/wiki/AOL

Appadurai, A. (1996). *Modernity at Large: cultural dimensions of globalization.* Minneapolis: University of Minnesota Press.

Axelrod, R. (1985). *The evolution of cooperation*. New York, NY: Basic Books.

Ayers, P., Matthews, C., & Yates, B. (2008). *How Wikipedia works and how you can be a part of it*. San Francisco, CA: No Starch Press.

Bach J., & Stark, D., (2004). ELink, search, interact: The co-evolution of NGOs and interactive technology, *Theory, Culture and Society, 21*, 101-117.

Bacon, D. (1993, June 30). Reshuffling silicon valley. *The Bay Guardian, Retrieved from http://www.sfbg.com/*

Baker, G,. (2007, September 29). *Post: Comments on the FreeCulture.org draft bylaws*. Retrieved from http://www.gavinbaker.com/2007/09/29/comments-on-the-freecultureorg-draft-bylaws/

Balandier, G. (1967). *Anthropologie politique.* Paris: PU.

Barabási, A.-L. (2002). *Linked. The New Science of the Networks*. Cambridge/MA: Perseus.

Barandiaran, X. (2006). Hacklabs, hackmeetings. In VV.AA. *Ciberactivismos*. Barcelona: Virus editorial.

Barber, B. (1998). *A Passion for Democracy.* Princeton University Press.

Baringhorst, S., Kneip, V., & Niesyto, J. (eds.). (2009). *Political Campaigning on the Web.* Bielefeld: Transcript Verlag.

Barley, S. R., & Kunda, G. (2001). Bringing work back in. *Organization Science, 12*, 76-95.

Barnes, P. (2009). Capitalism3.com: A guide to reclaiming the commons. Point Reyes Station, CA: Author.

Bateson, G. (1972). *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology.* University Of Chicago Press. ISBN 0-226-03905-6.

Bauwens, M. (2005). The Political Economy of Peer Production**.** *1000 Days of Theory.* Retrieved from http://www.ctheory.net/articles.aspx?id=499

Baym, N. (1993). Interpreting soap operas and creating community: Inside a computer- mediated fan culture. *Journal of Folklore Research, 30* 143-176.

Becker, M.C. (2001). Managing dispersed knowledge: Organizational problems, managerial strategies, and their effectiveness. *Journal of Management Studies, 38,* 1037-1051.

Bellezza, E. & Florian, F (2006). Fondazioni di Partecipazione. [Foundations of participation]. Florence, Italy: La Tribuna.

Benkler, Y. (2002). Coase's penguin, or, Linux and the nature of the firm. *The Yale Law Journal, 112,* 369-446. Retrieved from http://www.yale.edu/yalelj/112/BenklerWEB.pdf

Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom*. New Haven, CT: Yale University Press.

Bennett, D., & Fielding, P. (1999). *The net effect: How cyberadvocacy is changing the political*

landscape. Washington, DC: Capitol Advantage.

Bennett, L.W. (2003). New media power: The Internet and global activism. In N. Couldry & J. Curran (Eds.), *Contesting media power: Alternative media in a networked world* (pp. 17-37). Lanham, MD: Rowman and Littlefield.

Bennett, L.W. (2004). Communicating global activism: Strengths and vulnerabilities of networked politics. In W. van de Donk, B. D. Loader, P. G. Nixon & D. Rucht (Eds.), *Cyberprotest: New media, citizens and social movements* (pp.123-46). New York, NY: Routledge.

Bennett, L. W. (2005). Social movements beyond borders: Understanding two eras of transnational activism. In D. della Porta & S. Tarrow (Eds.), *Transnational protest and global activism* (pp. 203-26). New York, NY: Rowman & Littlefield.

Bennett, L. W., Givens, T. E., & Willnat, L. (2004, April 14-18). Crossing the political divide: Internet use and political identification in transnational anti-war and social justice activists in eight nations. Paper presented at the *European Consortium for Political Research*, Uppsala, Sweden. Retrieved from http://www.essex.ac.uk/ecpr/events/jointsessions/paperarchive/uppsala/ws24/Bennett.pdf

Berdahl, J., & Craig, K. (1996). Equality of participation and influence in groups: The effects of communication medium and sex composition. *Computer Supported Cooperative Work, 4,* 179-201.

Berners-Lee, T. (2007). *The scale-free nature of the web*. Retrieved from http://www.w3.org/DesignIssues/Fractal.html.

Bert-Schlosser, D., (2004). The Quality of Democracies in Europe as measured by current indicators of democratization and good governance. *Journal of Communist Studies and Transition Politics, 20(1)*, 28-55.

Biccum, A. (2005). The World Social Forum: Exploiting the ambivalence of open spaces. *Ephemera, 5,* 116-133.

Bimber, B. (1998). Toward an empirical mapping of political participation on the Internet. Paper presented at the *APSA Annual Conference*, Boston, MA.

Bimber, B. (2003). *Information and American democracy*. Cambridge, UK: Cambridge University Press.

Bimber, B, Flanagin, A, & Stohl, C. (2005). Reconceptualizing collective action in the contemporary media environment. Communication Theory, 15, 365-388.

Blais, A. (2000). *To vote or not to vote? The merits and limits of rational choice theory*. Pittsburgh, PA: University of Pittsburgh Press.

Boéri, J, & Hodkinson, S. (2004). Babels and the politics of language at the hearth of Social Forum. In Reyes, O., Wainwright, H., Fuster Morell, M., & Berlinguer, M. (2004). *Euromovements Newsletter: European Social Forum, a debate on the challenges for its future.* Retrieved from http://www.euromovements.info/newsletter/babel.htm

Bollen, K. A., & Paxton, P. (2000). Subjective Measures of Liberal Democracy. *Comparative Political Studies, 33(1),* 58-86.

Bollen, K. A., (1990). *Political Democracy: Conceptual and Measurement Traps*. *Studies in Comparative International Development, 25(1),* 7-24.

Bollier, D. (2004, June 12). *Is the commons a movement?* Paper presented at The wizards of OS3: The future of the digital commons Berlin, Germany.

Bollier, D (2008). Los bienes comunes: Un sector soslayado de la creación de riqueza [The communal properties: An avoided sector of the wealth creation]. In S. Helfrich (Ed.), *Genes, Bytes y Emisiones - Bienes Comunes y Ciudadanía* [Genes, Bytes and Emissions - Communal properties and Citizenship]. Mexico DF: Ediciones Böll. Retrieved from http://www.boell-latinoamerica.org/download_es/Bienes_Comunes_total_EdiBoell.pdf

Boltanski, L., & Chiapello, E. (2005). *The new spirit of capitalism*. London, UK: Verso.

Bosco. G. (2004). Implicit theories of ”good leadership” in the open- source community. Master’s thesis, Technical University of Denmark, May 2004. Retrieved from http://opensource.mit.edu/papers/bosco.pdf

Bowman, S., & Willis, C. (2003). *We media: How audiences are shaping the future of news and information*. Stanford, CA: The Media Center at the American Press Institute. Retrieved from http://www.hypergene.net/wemedia/download/we_media.pdf

boyd, d. (2008). *Taken Out of Context: American Teen Sociality in Networked Publics.* (Unpublished doctoral dissertation). University of California-Berkeley, School of Information.

boyd, d., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 11. Retrieved from http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html

Boyle, J. (1997). A Politics of Intellectual Property: Environmentalism for the Net?. *Duke Law Journal, 47, (1),* 87-116.

Boyle, J. (2003). *The second enclosure movement and the construction of the public domain.* Retrieved from http://www.law.duke.edu/boylesite/

Bratman, M. (1993). Shared intention. *Ethics, 104,* 97-114.

Breindl, Y. (2010). Internet-based protest in European policymaking: The case of digital activism *International Journal of E-Politics (IJEP), 1*, 57-72.

Brown, J., & Duguid, P. (1991). Organizational Learning and Communities of Practice: Toward a unified view of working, learning, and innovation. *Organizational Science, 2 (1)*, 40-57.

Bryant, S., Forte, A., & Bruckman, A. (2005, November 6-9). *Becoming Wikipedian: Transformation of participation in a collaborative online encyclopedia*. Paper presented at GROUP, Sanibel Island, FL.

Bucchi, M., & Neresini, F. (2006). Science and public participation. In E. J. Hackett, O. Amsterdamska, M. Lynch, & J. Wajcman (Eds.), *New handbook of science and technology studies* (pp.449-472). Cambridge, MA: The MIT Press.

Burgess, J. (2007). *Vernacular creativity and new media*. (Unpublished doctoral dissertation). University of Queensland, Australia.

Burke, M. & Kraut, R. (2008). Administrators: Mopping up: modeling wikipedia promotion decisions. *Proceedings of the 2008 ACM conference on Computer supported cooperative work*. San Diego, CA, USA, 27-36.

Buxton, N. (2009). Piracy and the digital revolution. *Red Pepper*. Retrieved from http://tni.org/inthemedia/piracy-and-digital-revolution

Cain, B., Dalton, R. & Scarrow, S. (Eds.). (2003). *Democracy transformed? Expanding political opportunities in advanced industrial democracies.* Oxford, UK: Oxford University Press.

Calderaro A., (2009). The Digital Divide, framing and mapping the phenomenon. In Ferro E., Dwivedi Y.K., Gil-Garcia J.R., Williams M.D. (Eds.), *Handbook of Research on Overcoming Digital Divides: Constructing an Equitable and Competitive Information Society*. Hershey, PA: IGI Global.

Calderaro, A. (2010a). *Digital Politics Divide: the digital divide in building political E-Practices* (Unpublished doctoral dissertation). European University Institute, Florence.

Calderaro, A. (2010b). Empirical analysis of political spaces on the Internet: The role of e-mailing lists in the organization of alter-globalization movements. *International Journal of E-Politics (IJEP), 1,* 73-87.

Calenda, D., & Lyon, D. (2006). Culture e tecnologie del controllo: riflessioni sul potere nella società della rete. [Culture and technology of control: Reflexions about the power of network society] *Rassegna Italiana di Sociologia, 4*, 583-612.

Cammaerts, B., & Van Audenhove, L. (2003) *ICT-Usage among Transnational Social Movements in the Networked Society: to organize, to mediate & to influence*. Amsterdam: ASCoR, Amsterdam Free University.

Campaign . *New Media & Society, 10(4),* 647-65.

Campbell, J. L. (2005). Where do we stand? Common mechanims in organizations and social movements research. In G. F. Davis, D. McAdam, W. R. Scott, & M. N. Zald (Eds.), Social *Movements and organization theory* (pp. 41-68). New York, NY: Cambridge University Press.

Capocci, A. Servedio, V., Colaiori, F., Buriol, L. Donato D., Leonardi, S., & Caldarelli, G. Preferential attachment in the growth of social networks: The case of Wikipedia. Physical Review E, 74, 036116 (2006).

Cardon, D., & Aguiton, C. (2007). The strength of weak cooperation: An attempt to understand the meaning of Web 2.0. *Communications & Strategies, 65*, 51-65.

Carlsson, B., & Gustavsson, R. (2001). The Rise and Fall of Napster - An Evolutionary Approach. `Proceeding AMT '01 Proceedings of the 6th International Computer Science Conference on Active Media Technology.

Carroll, G. R., & Swaminathan, A. (2000). Why the microbrewery movement? Organizational

dynamics of resource partitioning in the US brewing industry. *American Journal of Sociology, 106*, 715–762.

Caruso, G. (2005). Open office and free software: The politics of the WSF 2004 as workplace. *Ephemera 5*, 173–192.

Casero, A. (2007). *Propuesta de metodología para el análisis de las webs de los partidos politicos*. [Proposal of methodology for the analysis of the Webs of the political parties] (Unpublished document provided by the author).

Castells, M. (1997). *The power of identity.* Malden, MA: Blackwell.

Castells, M. (2000). *The rise of the network society.* Malden, MA: Blackwell.

Castells, M. (2001). *The Internet galaxy: Reflections on the Internet, business and society*. Oxford, UK: Oxford University Press.

Castells, M. (2002, October 4). *La dimensió cultural de Internet*. Sesion 1: Cultura y sociedad del conocimiento: presente y perspectivas de futuro [Culture and knowledge society: present and perspective for the future]. Institut de cultura. Barcelona, Spain.

Castells, M. (2007). Communication, power and counter-power in the network society. *International Journal of Communication, 1*, 238-66.

Castells, M. (2009). *Communication power*. Oxford, UK: Oxford University Press.

Casula Vifell, Å. (2009). Increasing democratic ownership through interactive governance. ECPR 10-12 September, Potsdam University, Panel 456. "Effective interactive governance and policymaking"..

Chadwick, A. (2007). Digitial Network Repetoires and Organizational Hybridity. Political Communication, 24, 283-301.

Ciffolilli, A. (2003). Phantom authority, self-selective recruitment and retention of members in virtual communities: The case of Wikipedia. *First Monday, 8 (12)*. Retrieved from http://www.firstmonday.org/issues/issue8_12/ciffolilli/

Clemens, E., (1997). *The people's lobby: Organizational innovation and the rise of interest group politics in the United States, 1890–1925*. Chicago, IL: University of Chicago Press.

Clemens, E. (2005). Two kinds of stuff: the current encounter of social movements and organizations. In G. F. Davis,. D. McAdam,; W. R. Scott,& N. Z. Mayer (Eds.), *Social movements and organization theory*. New York, NY: Cambridge University Press.

Clemens, E., & Minkoff, D. (2004). Beyond the iron law: Rethinking the place of organizations in social movement research. In D. A. Snow, S. A. Soule, & H. Kriesi (Eds.), *The Blackwell companion to social movements* (p 155-170). Blackwood, NJ: Blackwell

Clendenning, A. (2005, January 30). World Social Forum: Activists urge free open-source software. *Associated Press* Retrieved from http://www.commondreams.org/headlines05/0130-03.htm

Cloward, R. & Piven, F. (1966, May 2). The Weight of the Poor: A Strategy to End Poverty. New York: The Nation (p. 512).

Coase, R. (1937). The nature of the firm, *Economica, 4,* 386-405.

Coleman, S., Taylor, J., &, Van de Donk, W. (Eds.). (1999). Parliament in the Age of the Internet. *Oxford: Oxford University Press.*

Colleman, G. (2004). The political agnosticism of free and open source software and the inadvertent politics of contrast*. Anthropology Quarterly. 77, 507-519.*

Colleman, G., & Hill, M. (2004). The social production of ethics in Debian and free software communities. In S. Koch (Ed.), *Free and open source software development* (pp. 27-58). Hershey, PA: Idea Group.

Constanza-Chock, S. (2003). Mapping the repertoire of electronic contention. In A. Opel & D. Pompper (Eds.), *Representing resistance: Media, civil disobedience, and the global justice movement* (pp. 173-791). London, UK: Praeger.

Cox, A.M. (2008). Flickr: A case study of Web2.0. *Aslib Proceedings, 60 (5),* 493-516 Retrieved from http://dx.doi.org/10.1108/00012530810908210

Cox, A., Clough, P. & Marlow, J. (2008). Flickr: a first look at user behaviour in the context of photography as serious leisure. *Information Research 13 (1).* Retrieved from http://informationr.net/ir/13-1/paper336.html.

Cox, L., & Barker, C. (2002, April). *What the Romans have ever done for us?: Academic and activist forms of movement theorizing.* Paper presented at 8th annual conference of Alternative Futures and Popular Protest. Manchester Metropolitan University, Manchester, UK. Retrieved from http://eprints.nuim.ie/428/1/AFPPVIII.pdf

Creative Commons. (2009, September). *Defining "noncommercial": A study of how the online population understands "noncommercial use*". Retrieved from http://mirrors.creativecommons.org/defining-noncommercial/Defining_Noncommercial_fullreport.pdf

Crouch, C., (2004). *Post-democracy. Malden*. MA: Polity Press.

Crowston, K., & Howison, J. (2004). The social structure of Free and Open Source software development. *First Monday, 10*. Retrieved from http://131.193.153.231/www/issues/issue10_2/crowston/index.html

Crowston, K., & Howison, J. (2006). Hierarchy and centralization in free and open source software team communications. *Knowledge, Technology and Policy, 18,* 65-85.

Cunha, C., Martin, I., Newell, J., & Ramiro, L. (2003). Southern European parties and party systems, and the new ICTs. In Gibson R., Nixon P. & Ward, S (Eds). *Political Parties and the Internet* (pp. 70-97). London: Routledge.

Dader, J. L., & Díaz Ayuso, I. (2007). *Las webs de partidos españoles 2004-2005: Una investigación preliminar y de comparación europea, con una propuesta metodológica*. [The Webs of Spanish parties 2004-2005: A preliminary investigation and European comparison, with a methodological proposal]. Ponencia presentada en el I Congreso de Investigación en Comunicación Política. – Ciclo Complutense, Madrid.

Dafermos, G. (2009). Hackers and social movements. Paper presented at the conference Shaping

Europe in a Globalized World? Protest Movements and the Rise of a Transnational Civil Society . University of Zurich, Switzerland June 23-26, 2009.

Dafermos, G., & Söderberg, J. (2009, March 22). The hacker movement as a continuation of labour struggle. *Capital and Class*. Retrieved from http://www.thefreelibrary.com/The+hacker+movement+as+a+continuation+of+labour+struggle.-a0194549143

Daft, R. L. & Lewin, A. L. (1993). Where are the theories for the new organizational forms - an editorial essay. *Organization Science, 4: R1-R6.*

Dahl , R. A. (1986). *A preface to economic democracy*. Ewing, NJ: University of California Press.

Dahlander, L., & Magnusson, M. G. (2005). Relationships between open source software companies and communities: Observa tions from Nordic firms. *Research Policy, 34,* 481–493.

Dahlander, L., & O'Mahony, S. (2008, October 28). *Progressing to the center: The antecedents and consequences of lateral authority*. University of California Davis School of Management Research Paper No. 07-08.

Dalton, R., & Wattenberg, M. (2000). *Parties without partisans*. Oxford, UK: Oxford University Press.

Danlberg, L. (2005a). The Corporate Colonization of Online Attention and the Marginalization of Critical Communication?. *Journal of Communication Inquiry 29 (2),* 1-21.

Danlberg, L. (2005b). The Internet as Public Sphere or Culture Industry? From Pessimism to Hope and Back. *Media and Cultural Politics 1 (1)*, 93-96.

Davis, G. F., McAdam, D., Scott, W. R.; &, Zald, M. N. (2005). *Social movements and organization theory*. New York, NY: Cambridge University Press.

Davis, G. F., & Powell, W. W. (1992). Organization-environment relations. In M. D. Dunette and L. M. Hough (Eds.), *Handbook of industrial and organizational psychology*. Consulting Psychologists Press, Palo Alto, CA. pp. 315-376.

David, P. A. (2004). Understanding the emergence of "open science" institutions: Funtionalist economics in history context. *Industrial and Corporate Change, 13*, 571–589.

Davis, R. (1999). *The web of politics: The internet's impact on the American political system*. Oxford, UK: Oxford University Press.

De Landtsheer, C., Krasnoboka, N., & Neuner, C. (2001). La facilidad de utilización de los websites de partidos políticos. Estudio de algunos países de Europa del Este y Occidental [The facility of use of websites of political parties. Study of some countries of Western and East Europe]. *Cuadernos de Información y Comunicación (CIC), 6*, 107-140.

de Tocqueville, A. (1945). *Democracy in America* (vol.2) New York: Vintage. (Original published in 1840) .

della Porta, D. (2004). Multiple belongings, Tolerant identities, and the construction of "another politics": Between the European Social Forum and the local social fora. In D. della Porta &

S. Tarrow (Eds.), *Transnational protest and global activism* (pp.175-202). Lanham, MD: Lanham: Rowman and Littlefield.

della Porta, D. (2005a). Making the polis: social forums and democracy in the global justice movement. *Mobilization*, *10*, 73-94.

della Porta, D. (2005b). Between the European Social Forum and the local social fora. In D. della Porta & S. Tarrow (Eds.), *Transnational protest and global activism* (pp.175-202). New York, NY: Rowman & Littlefield.

della Porta, D. (2005c). *The social bases of the global justice movement: Some theoretical reflections and empirical evidence from the first European social forum*. Civil Society and Social Movements Programme Paper No. 21.Geneva, Switzerland: United Nations Research Institute for Social Development (UNRISD).

della Porta, D. (2006b). *Democrazia e internet. Una introduzione* [Democracy and Internet. An introduction]. *Rassegna Italiana di Sociologia, 4*, 521-528.

della Porta, D. (2007a, May). *Global activists: Conceptions and practices of democracy in the European social forum.* Paper presented at the Annual Joint Sessions of the European Consortium for Political Research, Helsinki, Finland.

della Porta, D. (2007b). *The global justice movement: Cross-national and transnational perspectives*. Boulder, CO: Paradigm.

della Porta, D. (Ed.). (2009). *Democracy in social movements*. New York, NY: Palgrave.

della Porta, D, Andretta, M., Mosca, L., & Reiter, H. (2005). *Globalization from below. Transnational activists and protest networks.* Minneapolis, MN: University of Minnesota Press.

della Porta, D., & Diani, M. (2006). *Social Movements. An Introduction*. 2nd edition. Oxford: Blackwell.

della Porta, D., Kriesi, H., & Rutch, D. *Social movements in a globalising world.* Basingstoke: Palgrave McMillan.

della Porta, D., & Mosca, L. (2005). Global-net for global movements? A network of networks for a movement of movements. *Journal of Public Policy 25*, 165-90.

della Porta, D., & Mosca, L. (2006). Report on WP2 – Searching the net. Project Democracy In Europe and the mobilization of society. Retrieved from http://demos.eui.eu

della Porta, D., & Mosca, L. (2009). Searching the net. Web sites' qualities in the Global Justice Movement. *Information, Communication & Society, 12, (6),* 771 - 792.

della Porta, D., & Rucht, D. (2002). The Dynamics of Environmental Campaigns. *Mobilization: An International Quarterly. 7 (1),* 1-14.

della Porta, D., & Rucht, D. (2010). Power and Democracy in Global Justice Movements. In della Porta, D., & Rucht, D. Meeting democracy. (Forthcoming).

della Porta, D. & Tarrow, S. (Eds.). (2005). *Transnational protest and global activism*. New York, NY: Rowman & Littlefield.

Diamond, L., & Morlino, L. (2004). The Quality of Democracy. An Overview. *Journal of Democracy, 15(4),* 20-31.

Diani, M. (2000). Social Movement Networks Virtual and Real. *Information, Communication and Society*, *3*, 386-401.

Diani, M. (2003). Introduction: social movements, contentious actions, and social networks: 'metaphor to substance?. In Diani, M. & McAdam, D. (Eds.), *Social movements and networks. Relational approaches to collective action* (pp. 1-18). New York: Oxford University Press,

Diani, M. (2004). Do we still need SMOs? Organizations in civil society networks1 Paper for presentation at the ECPR Joint Sessions of Workshops, Upssala, 13-18 March 2004.

Diomidis, S., & Panagiotis, L. (2008). The collaborative organization of knowledge: Why Wikipedia's growth is sustainable. *Communications of the ACM, 51*, 68-73. doi:10.1145/1378704.1378720

Dobusch, L. (2009a). Wikimania preview the importance of clear boundaries for community-participation. Retrieved from http://governancexborders.wordpress.com/2009/05/25/wikimania-preview-1-the-importance-of-clear-boundaries-for-community-participation/

Dobusch, L. (2009b). Different Transnationalization Dynamics of Creative Commons and Wikimedia. Retrieved from http://governancexborders.wordpress.com/2009/06/15/wikimania-preview-2-different-transnationalization-dynamics-of-creative-commons-and-wikimedia/

Doerr, N. (2005). *The European Social Forum process. Democracy and deliberation in a transnational public space* (Unpublished doctoral dissertation). European University Institute, Florence, Italy.

Doerr, N. (2007). Is 'another' public space actually possible? Deliberative democracy and the case of 'women without' in the ESF process, *International Journal of Women's Studies, 8,* 71-87. Retrieved from http://www.bridgew.edu/Soas/jiws/April07/Doerr.pdf

Doerr, N. (2008). Deliberative discussion, language, and efficiency in the WSF process. *Mobilization, 13,* 395-410.

Doerr, N. (2009). *Listen carefully: democracy brokers at the European social forums.* (Unpublished doctoral dissertation). European University Institute, Florence.

Duke Law Journal, 47, (1), 87-116.

Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2005). New public management is dead: Long live digital era governance. Journal of Public Administration Research and Theory, 16(3):467-494; doi:10.1093/jopart/mui057

Dutton, W. & Helsper, E. (2007). *The Internet in Britain: 2007.* Oxford: Oxford Internet Institute. Retrieved from http://www.oii.ox.ac.uk/microsites/oxis/

Earl, J. (2000). Methods, movements, and outcomes: Methodological difficulties in the study of extra-movement outcomes. In P. G. Coy (ed*.), Research in Social Movements, Conflicts, and Change* (pp. 3–25). Stamford, CT: JAI Press.

Eisenhardt, K., & Santos. (2000). Tacit knowledge and organisational performance: Construction industry perspective. *Journal of Knowledge Management. 11*, 115-126

Eisenscher, M. (1986). *Silicon Valley high technology industry: Ready for organizing* (Unpublished monograph document provided by the author).

Emigh, W., & Herring, S. (2005, January 3-6). Collaborative authoring on the Web: A genre analysis of online encyclopedias. *Proceedings of the 38th Annual Hawaii International Conference on System Sciences, 4.* Retrieved from IEEE Computer Society http://www.computer.org/plugins/dl/pdf/proceedings/hicss/2005/2268/04/22680099a.pdf?template=1&loginState=1&userData=anonymous-IP%253A%253AAddress%253A%2B66.66.238.99%252C%2B%255B172.16.161.4%252C%2B66.66.238.99%252C%2B127.0.0.1%255D

Endres, D.D., Sprain, L., Peterson, T.R. (2009). *Social Movement to Address Climate Change: Local Steps for Global Action.* Amherst, NY: Cambria Press.

Epidemia. (2009). *Free culture is not a commodity*. (Paper distributed at the World Social Forum).

Euromovements. (2006). *Wikiforum: Wiki on the European Social Forum process.* Retrieved from http://www.euromovements.info/yearbook

Eyerman, R., & Jamison, A. (1991). *Social Movements: A Cognitive Approach.* University Park: Pennsylvania State University Press.

Fleming, M. (2003). *Communication rights in the Information Society Campaign* (CRIS) Mobilizes for the World Summit on the Information Society. A Report on CRIS Info Listserv Content,

Flew, T. (2002). *New media: An introduction*. Melbourne, Australia: Oxford University Press.

Formenti, C. (2008, April). *Cybersoviet. Utopie postdemocratiche e nuovi media*.[Cybersoviet. Postdemocratic utopies and new media] Milano, Italy: R. Cortina.

Forte, A., & Bruckman, A. (2008). Scaling consensus: Increasing decentralization in Wikipedia governance. *Proceedings of the 41st Annual Hawaii International Conference on System Sciences,* pp.157-167. Retrieved from IEEE Computer Society http://www.computer.org/plugins/dl/pdf/proceedings/hicss/2008/3075/00/30750157.pdf?template=1&loginState=1&userData=anonymous-IP%253A%253AAddress%253A%2B66.66.238.99%252C%2B%255B172.16.161.4%252C%2B66.66.238.99%252C%2B127.0.0.1%255D

Forte, A., Larco, V., & Bruckman, A. (2009). Decentralization in Wikipedia Governance. *Journal of Management Information Systems, v.26 n.1,* p.49-72.

Foucault, M. (1977). *Discipline and punish : the birth of the prison.* New York: Pantheon Books.

Freeman, R., & Rogers, J. (2002). Open source unionism: Beyond exclusive collective bargaining. *Working USA: Journal of Labor and Society, 5*, 3–4.

Frickel, S., & Gross , N. (2005). A general theory of scientific/intellectual movements. *American Sociological Review, 70,* 204–232.

Frumkin, P. (2002). *On being nonprofit*. Cambridge, MA: Harvard University Press

Fuchs, C. (2008). Introduction to the special issue on ICT and society: PhD Students. Triple C. Retrieved from Triple C http://www.triple-c.at/index.php/tripleC/article/view/80/74

Fuster Morell, M. (2004). InvestigAction and social forums. In O. Reyes, H. Wainwright, M. Fuster Morell, and M. Berlinguer (2004). *Euromovements Newsletter: European Social Forum, a debate on the challenges for its future.* Retrieved from http://www.euromovements.info/newsletter/mayo.htm

Fuster Morell, M. (2005). El activismo asociativo pro-wifi en el Estado Español [Pro-wiffi associacionism activism in the Spanish State]. *Archivo Observatorio para la CiberSociedad*. Retrieved from http://www.cibersociedad.net/archivo/articulo.php?art=210

Fuster Morell, M. (2007) Strumenti tecno-politici [Techno-political Instruments]. In Transform! Italia *Parole di una nuova politica*. Published by Edizioni XL Roma. (Pages 113 – 121).

Fuster Morell, M. (2009). Action research: mapping the nexus of research and political action. *Interface Journey. Issue one (1).*

Fuster Morell, M., Juris, J., Duran, E., & Vergel, M. (2005). Lògica cultural de les xarxes i transformació social [Cultural logic of the networks and social transformation] (pp. 125-132). In Investigacció, Col.lectiu *Recerca activista i moviments socials*. Barcelona: El Viajo Topo.

Gamson, W. A. & Schmeidler, E. (1984, July). Review of Poor People's Movements: Why They Succeed, How They Fail by F. F. Piven & R. A. Cloward. *Theory and Society 13, no. 4,* 567-585.

Gamson, W. A. (1992). *Talking Politics.* Cambridge: Cambridge University Press.

Garcia, A. C., Standlee, A. I., Bechkoff, J., & Cui, Y. (2009) Ethnographic approaches to the internet and computer-mediated communication. *Journal of Contemporary Ethnography, 38*, 52-84.

Garcia, J., Via Llop, J., Xirinacs, L. M. (Eds). (2006). *La dimension cooperativa: Economia y transformacion social* [The cooperative dimension: Economy and social transformation]. Barcelona, Spain: Icaria.

Gardler, R. & Hanganu, G. (2010) Benevolent dictator governance model. Retrieved from http://www.oss-watch.ac.uk/resources/benevolentdictatorgovernancemodel.xml

Garrett, R. K. (2006). Protest in an information society: A review of literature on social movements and new ICTs. Information, *Communication & Society, 9,* 202-224.

Garrido, M., & Halavais, A. (2003). Mapping networks of support for the Zapatista movement: Applying social-networks analysis to study contemporary social movements. In M. McCaughey & M. D. Ayers (Eds.), *Cyberactivism. Online activism in theory and practice* (pp. 165-184). London, UK: Routledge.

Gelder, K. (2007). Subcultures: Cultural Histories and Social Practice. Routledge.

Geiger, S. (2010). Presentation and blog post at Wikipedia - Critical Point Of Vivew. Amsterdam, March 2010. Retrieved from http://networkcultures.org/wpmu/cpov/2010/03/27/stuart-geigerwhat-is-in-control-of-wikipedia/

Ghosh, R. A., & Prakash, V. V. (2000). The Orbiten free software survey. *First Monday*, *5*(7). Retrieved from First Monday http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/769/678

Ghosh, R., Ruediger, G., Bernhard, K., & Robles, G. (2002). *Free/Libre and open source software: Survey and study [Report]*. Maastricht, The Netherlands: International Institute of Infonomics. Retrieved from http://www.flossproject.org/report/FLOSS_Final4.pdf

Gibson, R. K. (2009). New Media and the Revitalisation of Politics. In Stoker, Hay & Williamson (Eds.). Special Issue of Representation.

Gibson, R., Nixon, P., & Ward, S. (Eds.) (2003) *Political Parties and the Internet. Net gain?.* New-York and Londres: Routledge.

Gibson, R., & Ward, S., (1998) U.K. Political Parties and the Internet: "Politics as usual" in the New Media?. *Harvard International Journal of Press/Politics 3(3),* 14-38.

Gilbert, M. (2006a). Rationality in collective action. *Philosophy of the Social Sciences, 36,* 3–17. Abstract retrieved from http://pos.sagepub.com/cgi/content/abstract/36/1/3 doi:10.1177/0048393105284167

Gilbert, M. (2006b). A theory of political obligation: Membership, commitment, and the bonds of society. Oxford, UK: Oxford University Press.

Gilbert, M.(1989). *On social facts.* NJ: Princeton University Press.

Giles, J. (2005, December). Internet encyclopaedias go head to head. *Nature*, *438*, 900-901. doi:10.1038/438900a

Giugni, M. G. (1998). Was it worth the effort? The outcomes and consequences of social movements. *American Sociological Review, 98,* 371–393.

Glott, R., Schmidt, P., & Ghosh, R. (2009). *Wikipedia survey*. Working draft. Unu - Merit.

Goffman, E. (1983). The interaction order (American Sociological Association 1982 Presidential Address). *American Sociological Review 48,* 1-17.

González Garcia, R. & Fuster Morell, M. (2005). *El proceso de los Foros sociales: nuevos actores en la gobernanza global/loca*l. VII Congreso AECPA. Madrid, 21-23 septiembre de 2005.

Grabher, G. (1990), Between markets and hierarchies: New forms of inter-firm cooperation. *Der Öffentliche Sektor, 15* 14-25.

Grabher, G., & Maintz, J. (2006), *Learning in personal networks: Collaborative knowledge Production in virtual forum*s. Working Papers Series, Center on Organizational Innovation, Columbia University Retrieved from http://www.coi.columbia.edu/pdf/grabher_maintz_lpn.pdf

Gramsci, A. (1971). *Selections from the Prison Notebooks*. New York: International Publishers,

Granovetter, M. (1983). The strength of weak ties, A network theory revisited. In R. Collins (Ed.),

Sociological Theory (Vol. 1) (pp. 201-233). San Francisco, CA: Jossey-Bass.

Greenstein, S., & Devereaux, M. (2009). Wikipedia in the Spotlight. Kellogg Case Number: 5-306-507; HBS Case Number: KEL253. Case Collection at the Kellogg School of Management. Retrieved from http://www.kellogg.northwestern.edu/faculty/greenstein/images/htm/Research/Cases/Wikipedia_RVFinal_0709.pdf

Gregg, M. (2009). Learning to (Love) Labour: Production cultures and the affective turn. *Communication and Critical/Cultural Studies 6 (2).*

Gurak. L. (1997). *Persuasion and privacy in cyberspace: The online protests over Lotus Market-place and the Clipper Chip.* New Haven, CT: Yale University Press.

Haas, T. (2007). Do citizen-based media of communication advance public journalism's ideals? Evidence from the empirical research literature. *International Journal of Communication.* New York: Gale Group.

Habermas, J. (1992). *Faktizität und Geltung. Beiträge zur Diskurstheorie des Rechts und des demokratischen Rechtsstaats*. Frankfurt a.M.: Suhrkamp.

Habermas, J. (1996). *Die Einbeziehung des Anderen*. Frankfurt a.M.: Suhrkamp.

Hand, M., & Sandywell, B. (2002). E-topia as cosmopolis or citadel: On the democratizing and de-democratizing logics of the Internet, or, toward a critique of the new technological fetishism, *Theory, Culture & Society, 19*, 197-225.

Hansen, M.T. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly, 44,* 82-111.

Hardin, G. (1968). The tragedy of the commons. *Science, 162*, 1243-1248.

Hardin, R. (1982). *Collective action.* Baltimore, MD: John Hopkins University Press.

Haug, C. (2007). Meta-Democracy? Practices of public decision-making in the preparatory process for the European Social Forum 2006. Paper prepared for the ECPR Joint Sessions held 7-12 May 2007 in Helsinki.

Healy, K., & Schussman, A. (2003). *The ecology of open source software development.* Working Paper, Department of Sociology, University of Arizona, Social Sciences.

Helfrich, S. (Ed.). (2008) *Genes, Bytes y Emisiones - Bienes Comunes y Ciudadanía* [Genes, Bytes and Emissions - Communal properties and Citizenship]. Retrieved from http://www.boell-latinoamerica.org/download_es/Bienes_Comunes_total_EdiBoell.pdf

Herring, S. C. (1992). Men's language: A study of the discourse of the LINGUIST list. In: A. Crochetière, J-C. Boulanger, & C. Ouellon (Eds.), *Les langues menacées: Actes du XVe congrès international des linguists* [Threatened languages: Acts of XV international congress of the linguists] (Vol. 3 pp. 347-350). Québec, Canada: Les Presses de l'Université Laval. Retrieved form http://ella.slis.indiana.edu/~herring/men.1992.pdf

Herring, S. C. (2004). Computer-mediated discourse analysis: An approach to researching online behavior. In S. A. Barab, R. Kling, & J. H. Gray (Eds.), *Designing for virtual communities in*

the service of learning (pp. 338-376). New York, NY: Cambridge University Press. Retrieved from http://ella.slis.indiana.edu/~herring/cmda.pdf

Hess, C. (2008). Mapping the new commons. Conference Governing Shared Resources: Connecting Local Experience to Global Challenges, the Twelfth Biennial Conference of the International Association for the Study of Commons. Cheltenham, England. July 14-18, 2008Retrieved from http://dlc.dlib.indiana.edu/dlc/handle/10535/304

Hess, C. & Ostrom, E. (Eds.) (2007). *Understanding knowledge as a commons: From theory to practice*. Cambridge, Massachusetts: The MIT Press.

Hill, W. C., Hollan, J. D., Wroblewski, D. & McCandless, T. (1992, May 3-7). Edit wear and read wear. *Proceedings of CHI'92, the SIGCHI Conference on Human Factors in Computing Systems,* pp. 3-9. Monterey, CA

Hiltz, S. R. (1985). *Online communities: A case study of the office of the future*. Norwood, NJ: Ablex.

Himanen, P. (2001). *The hackers ethics and the and the spirit of information age*. New York, NY: Random House.

Hine, C. (2000). *Virtual ethnography*. Thousand Oaks, CA: Sage.

Hine, C. (Ed.). (2005) *Virtual methods: Issues in social research on the Internet.* Oxford, UK: Berg.

Holloway, J. (2002). Cambiar el mundo sin tomar el poder: el significado de la revolución hoy. Barcelona: el Viejo Topo.

Hughes, O. (2003). *Public Management and Administration: An Introduction*, 3rd ed. Bassingstoke. UK: Palgrave.

Hunter, F. (1953). Community power structure: a study of decision makers. Chapel Hill: University of North Carolina Press

Iannacci, F. (2002). The Social Epistemology of Open source Networks. Working Paper, Department of Information Systems, London School of Economics and Political Science: 1-28.

International Organization for Standardization (1991) ISO 9126: *Software engineering product quality.*

International Organization for Standardization (1998) ISO 9241 – 11:*Guidance on Usability.*

Internet, Technology and Communications Subcommittee USSF (ICT) (2007). Technology for another world, Newsletter, Atlanta, GA.

Investigacció (Col.lectiu). (2005***).*** *Recerca activista i moviments socials*. Barcelona. Ed. El Viejo Topo.

Investigacció, Col.lectiu (2005). *Recerca Activista i moviments socials*. Barcelona: El Viajo Topo.

Jarrett, K. (2008). Interactivity is Evil! A critical investigation of Web 2.0. *First Monday, 13* (3 - 3). Retrieved from http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/2140/1947

Juris, J. S. (2005). The new digital media and activist networking within anticorporate globalization

movements. *The Annals of the American Academy of Political and Social Sciences, 597,* 189–208.

Juris, J. S. (2008a). *Networking Futures*. Durham, N.C.: Duke University Press.

Juris, J. S. (2008b). Spaces of Intentionality: Race, Class, and Horizontality at the United States Social Forum*. Mobilization 13(4),* 353-372.

Juris, J. S., Caruso, G., & Mosca, L. (2008). Freeing software and opening space: Social forums and the cultural politics of technology. *Societies Without Borders, 3,* 96-117. doi: 10.1163/187219108X256235

Kavada, A. (2005). Civil society organizations and the Internet: The case studies of Oxfam, Amnesty International and the World Development Movement. In W. de Jong, M. Shaw, & N. Stammers (Eds.), *Global activism, global media* (pp. 208-222). London: Pluto Press.

Kavada, A. (2006, October 20-22). *The 'alter-globalization movement' and the Internet: A case study of communication networks and collective action*. Paper presented at the Cortona Colloquium 2006–Cultural Conflicts, Social Movements and New Rights: A European Challenge, Cortona, Italy.

Kavada, A. (2007a). *The 'horizontals' and the 'verticals': Competing communicative logics in the 2004 European Social Forum*. Paper prepared for the 2007 ECPR Conference. Pisa, Italy.

Kavada, A. (2007b). Email lists as multiple sites of identity construction: The case of the London 2004 European Social Forum. Paper prepared for the Symposium *Changing politics through digital networks: The role of ICTs in the formation of new social and political actors and actions*, Florence, Italy.

Kavada, A. (2010). Between individuality and collectiveness: Email lists and face-to-face contact in the global justice movement. *International Journal of E-Politics (IJEP), 1,* 41-56. Abstract retrieved from http://www.igi-global.com/Bookstore/Article.aspx?TitleId=38968

Keck, M. & Sikkink, K., (1998). *Activists beyond borders. Advocacy Networks in International Policy*. London: Cornell University Press.

Kelty, C.M. (2008). *Two Bits: The Cultural Significance of Free Software*. Duke press.

Keraghel, C., & Sen, J. (2004). Explorations in open space: The World Social Forum and cultures of politics. *International Science Journal, 56,* 483-493. doi: 10.1111/j.0020-8701.2004.00510.x

Keren, M. (2006). *Blogosphere: The New Political Arena*. Lexington Books

Kidd, D. (2003). The Independent Media Center: A New model. *Media Development.* Retrieved from http://www.wacc.org.uk/wacc/publications/media_development/2003_4/the_independent_m edia_ce nter_a_new_model. Accessed May 2008

Kim, A. J. (2000). *Community building on the web: Secret strategies for successful online communities*. London: Addison Wesley

Kim, A. J. (2004, January 27). *Emergent purpose. Musings of a social architect*. Retrieved from

http://socialarchitect.typepad.com/musings/2004/01/emergent_purpos.html

King, G., Keohane, R. & Verba, S. (1994). *Designing social inquiry: Scientific inference in qualitative research*. Princeton, NJ: Princeton University Press.

Kittur, A. Chi, E., Pendleton, B., Suh, B., & Mytkowicz, T. (2007, April-May). Power of the few vs. wisdom of the crowd: Wikipedia and the rise of the bourgeoisie. *Proceedings of the 25th Annual ACM Conference on Human Factors in Computing Systems (CHI 2007).*

Knorr-Cetina, K., & Bruegger, U. (2002). Global microstructures: The virtual societies of financial markets. *The American Journal of Sociology, 107*, 905-950.

Koch, S., & Schneider, G. (2002), Effort, cooperation and coordination in an open source software project: GNOME. *Information Systems Journal, 12*, 27–42,

Kollock, P. (1998). Social dilemmas: The anatomy of cooperation. In J. Hagan & K. S. Cook (Eds.), *Annual review of sociology*, (vol. 24) (pp. 183–214). Palo Alto, CA: Annual Reviews.

Kollock, P. (1999). The economies of online cooperation: Gifts and public goods in cyberspace. In M. Smith & P. Kollock (Eds.), *Communities in cyberspace* (pp. 219-240). London: Routledge.

Koman, R. (2005). Stewart Butterfield on Flickr. O'Reilly Network. Retrieved from http://www.oreillynet.com/pub/a/network/2005/02/04/sb_flckr.html

Konieczny, P. (2009). Governance, Organization, and Democracy on the Internet: The Iron Law and the Evolution of Wikipedia*. Sociological Forum, 24 (1),* 162-192.

Koopmans, R., & Zimmermann, A. (2007). Visibility and communication networks on the Internet: The role of search engines and hyperlinks. In C. De Vrees & H. Schmidt (Eds.), *A European public sphere: How much of it do we have and how much do we need* (pp. 213-264). Mannheim, Germany: Connex.

Kow, Y. M ., & Nardi, B. (2010). The creative ecology is one complete whole, and is dependent on User creativity, governance, and the new media: An introduction to the First Monday special issue. *First Monday, 15, (5)*. Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2954/2523

Kriplean, T., Beschastnikh, I., McDonald, D.W., & Golder, S. A. (2009) Community, Consensus, Coercion, Control: CS*W or How Policy Mediates Mass Participation. *GROUP 2007 - ACM Conference on Supporting Group Work.*

Kuwabara, K. (2000, March 6). Linux: A bazaar at the edge of chaos. *First Monday, 5*(3), Retrieved from http://firstmonday.org/issues/issue5_3/kuwabara/ .

Lakhani, K., & McAfee, A. (2007). Wikipedia (A). Harvard Business School Case 9607712. Cambridge, MA: Harvard Business School.

Lamb, B. (2005 September 25) *Interview with Jimmy Wales. Q & A Program*. Retrieved from http://qanda.org/Transcript/?ProgramID=1042

Lanzara, G. F., & Morner, M. (2003, July 3-5). *The knowledge ecology of open-source software projects.* Paper presented at the19th European Group of Organizational Studies (EGOS)

Colloquium. Copenhagen, Denmark.

Lanzara, G. F., & Morner. M. (2004). *Making and sharing knowledge at electronic crossroads: The evolutionary ecology of open source*. Paper presented at the Fifth European Conference on Organizational Knowledge, Learning and Capabilities, Innsbruck, Austria. Retrieved from http://www2.warwick.ac.uk/fac/soc/wbs/conf/olkc/archive/oklc5/papers/j-3_lanzara.pdf

Latour, B. (2005). *Reassembling the social: an introduction to Actor-network theory*, Oxford; New York, Oxford University Press, 2005

Lazar, J., & Preece, J. (2002). Social considerations in online communities: Usability, sociability, and success factors. In H. van Oostendorp (Ed.), *Cognition in the digital world* (pp. 119-132). Mahwah: NJ: Lawrence Erlbaum.

Lazzarato, M. (2005). *Immaterial labour.* Retrieved from http://www.generation-online.org/c/fcimmateriallabour3.htm

Leach, D.K., (2005). The Iron Law of What Again? Conceptualizing Oligarchy Across Organizational Forms. *Sociological Theory, 23(*3*),* 312-337(26).

Leadbeater, C. (2008). *We-Think–Mass innovation not mass production*. London, UK: Profile Books.

Leite, J. C. (2004). WSF (a Brief History): A new method of doing politics. In Transform! Italia, World Social Forum Newsletter. Rome, Italy.

Leite, J. C. (2005). *The World Social Forum: Strategies of resistance*. Chicago, IL: Haymarket Books.

Lerner, J., & Tirole, J. (2002). Some Simple Economics of Open Source. *Journal of Industrial Economics 50(2*), 197–234.

Lessig, L. (1999). *Code and other laws of cyberspace*. New York, NY: Basic Books.

Lessig, L. (2004). *Free culture: How big media uses technology and the law to lock down culture and control creativity*. New York, NY: Penguin Press.

Lessig, L. (2008). *Remix culture: Making art and commerce thrive in the hybrid economy*. New York, NY: Penguin Press.

Leuf, B & Cunningham, W. (2001). The Wiki way: quick collaboration on the Web. Boston, MA: Addison-Wesley Longman Publishing C., Inc. Boston, MA.

Leuf, B. & Cunningham, W. (2001). The Wiki way: quick collaboration on the Web. Boston, MA: Addison-Wesley Longman Publishing C., Inc

Levinson, P., (2004). Cellphone: The Story of the World's Most Mobile Medium, and How It Has Transformed Everything! Basignstoke: Palgrave Macmillan.

Levitt, S. D., & Dubner, S. J. (2005). *Freakonomics: A rogue economist explores the hidden side of everything*. New York, NY: William Morrow.

Levy, S. (1984). *Hackers: Heroes of the Computer Revolution.* New York: Delta

Liang, L. (2004). A Guide To Open Content Licences. Rotterdam: Piet Zwart Institute. Retrieved from http://www.pzwart.wdka.hro.nl/mdr/research/lliang/open_content_guide

Lichterman, P. (1996). *The search for political community: American activists reinventing commitment*. New York, NY: Cambridge University Press.

Lih, A (2009a). *The Wikipedia revolution: How a bunch of nobodies created the world's greatest encyclopedia*. New York, NY: Hyperion

Lih, A. (2009b). *Interpreting Wikipedia's demographic decline: Implications for an emergent community*. Retrieved from http://wikimania2009.wikimedia.org/wiki/Proceedings:221

Lipset, S. M. (1956). *Union Democracy: The Internal Politics of the International Typographical Union Glencoe*. IL: Free Press.

Loader, B. (2008). Social movements and new media. *Sociology Compass, 2,* 1920-1933.

Lombardo, P. & Belleza, E. (2006). *Le Fondazioni del terzo millennio*. Florence: ed. La Tribuna,

Loubser, M., & Pentzold, C. (2009). Rule dynamics and rule effects in commons-based peer production. Section: Internet and Politics. Panel: Contemporary Collective Action Dilemmas. 5th ECPR General Conference, Potsdam/Germany, 10-12 September 2009.

Lukes, S. (1974). *Power: a radical view* / Steven Lukes Imprint London; New York : Macmillan.

Lupia, A. & Sin, G. (2003). Which Public Goods Are Endangered? How Evolving Technologies Affect The Logic of Collective Action. *Public Choice 117,* 315-331.

MacDonald, D. (2009). Big is beautiful. *British Journal of Photography.* 4 November 2009. Retrieved from http://www.bjp-online.com/public/showPage.html?page=870634

Malo, M. (2004). *Nociones comunes: Experiencias y ensayos entre investigación y militancia*.[Common notions: Experiences and tests between investigation and militancy]. Posse, Deriva approdi, Precarias a la deriva, Grupo 116, Colectivo Sin Ticket, Colectivo Situaciones. Madrid Ed: Traficantes de sueños.

Malone, T. W. (2004). *The Future of Work*. Boston: Harvard Business .

Mansbridge, J. J. (1986). *Why we lost the ERA.* Chicago, IL: University of Chicago Press.

Margolis, M. & Resnick, D. (2000). *Politics as Usual: The "Cyberspace Revolution"* . Thousand Oaks, CA: Sage Publications.

Margolis, M., Resnick, D., & Wolfe, J. (1999). Party Competition on the Internet in the United States and Britain. *Harvard International Journal of Press/Politics 4(4):* 24-47.

Markus, M. L. (2007). The governance of free/open source software projects: monolithic, multidimensional, or configurational? *Journal of Management and Governance. 11*, 151-163 Retrieved from http://www.springerlink.com/content/41pm3213248h6301/?p=5c2f36331de84107b35c836ba36aa2d2&pi=4

Matei, S. A., Caius & Dobrescu. (2006). Ambiguity and conflict in the Wikipedian knowledge production system. 2006 International Communication.

Mattoni, A. (2009). *Multiple media practices in Italian mobilizations against precarity of work* (Unpublished doctoral dissertation). European University Institute, Florence.

Mauser, E. (1998). The importance of organizational form: Parent perspectives versus reality in the

day care industry. In W. Powell & E. Clemens (Eds.), *Private action and the public good* (pp. 124-136). New Haven, CT: Yale University Press.

Mayer, N. Z., & McCarthy, J. D. (Eds.). (1987). *Social movements in an organizational society: Collected essays.* New Brunswick, NJ: Transaction Books.

McCaughey, M, & Ayers, M. D. (Eds.). (2003). *Cyberactivism. Online activism in theory and practice* (pp. 165-184). London, UK: Routledge.

McCarthy, J. D. & Zald, M. N. (1977). Resource Mobilization and Social Movements: A Partial Theory. *American Journal of Sociology 82,* 1212-1241.

McLuhan, M. & Nevitt, B. (1972). *Take Today: The Executive as Drop Out.* New York: Harcourt Brace Jovanovich

Melucci, A. (1996). *Challenging codes.* Cambridge, UK: Cambridge University Press

Melucci, A., Keane J., & Mier P. (Eds.). (1989). *Nomads of the present: Social movements and individual needs in contemporary society.* London, UK: Century Hutchinson.

Meyer, E.T., Hara, N. & Rosenbaum, H. (2005). How photobloggers are framing a new computerization movement. Paper presented at Annual Conference of the Association of Internet Researchers, Chicago.

Michels, R., (1962). *Political parties: a sociological study of the oligarchical tendencies of modern democracy*. Imprint New York: Free Press.

Milan, S. (2005). Communicating civil society: Participation as the main benchmark of civil society media: The case of the world social forum. *Revista de Estudio para el Desarrollo Social de la Comunicacion*, 241-264.

Milan, S. (2009). *Stealing the fir : a study of emancipatory practices in the field of communication* (Unpublished doctoral dissertation). European University Institute, Florence.

Milan, S., & Hintz, A. (2004, July). *Civil society media and visions for communication governance: The cases of the world social forum and the World Summit on the Information Society*. International Association for Media and Communication Research Annual Conference. Porto Alegre, Brazil.

Miles, R. E., & Snow C. C. (1986). Organizations: New concepts for new forms. *California Management Review, 28*, 62-73.

Mockus, R., Fielding,T . & Herbsleb, J. D., (2002) Two case studies of Open Source software development: Apache and Mozilla. *ACM Transactions on Software Engineering and Methodology, 11*, 309–346.

Monge, P. R., Heiss, B., & Margolin, D. (2008). The ecology of communication networks in organizational communities. *Communication Theory, 18,* 449-477.

Monge, P. R., & Poole, M. S. (2008). The evolution of organizational communication. *Journal of Communication, 58,* 679-692.

Moody, G. (2001). *Rebel Code: Linux and the Open Source Revolution*. London: Penguin Press.

Moore, K. (1996). Organizing integrity: American science and the creation of public interest

organizations, 1955–1975. *American Journal of Sociology, 101*, 1592–1627.

Morlino, L. (2004). What is a 'good' democracy?. *Democratization, 11(5)*, 10-32.

Morris, A. (2000). Reflections on social movements theory: Criticisms and proposals. *Contemporary Sociology, 29,* 445-54.

Mosca, L. (2006). *Dalle piazze alla rete: movimenti sociali e nuove tecnologie della comunicazione.* [From the public squares to the net: social movements and new technologies of the communication]. (Unpublished paper provided by the author).

Mosca, L. (2007). *A double-faced medium?: the challenges and opportunities of the Internet for social movements* (Unpublished postdoctoral dissertation). European University Institute, Florence.

Mosca, L. (2010). From the streets to the net? The political use of the Internet by social movements. *International Journal of E-Politics (IJEP), 1,* 1-21.

Mosca, L., Rucht, D., Teune, S. & Lopez, S. (2009). Communicating the European Social Forum. In D. della Porta (Ed.), *Another Europe: Conceptions and practices of democracy in the European Social Forums* (pp. 46-64). London, UK: Routledge.

Mouge, P. & Contractor, N. (2003). *Theories of Communication Networks*. Cambridge: Oxford University Press.

Moulier-Boutang Y. (2007a). Le capitalisme cognitif, La nouvelle Grande Transformation, Paris, Editions Amsterdam.

Moulier-Boutang, Y. M. (2007b). Cognitive Capitalism and Entrepreneurship. Decline in industrial entrepreneurship and the rising of collective intelligence. Conference on Capitalism and Entrepreneurship. Center for the Study of Economy and Society. Cornell University, Ithaca, New York. September 2829, 2007

Moulier-Boutang, M., Corsani, A. Lazzarato, M., Vercellone, C., Blondeau, O., Dyer-Witheford, N., & Kyrou, A. (2004). *Capitalismo cognitivo: Propiedad intelectial y creación colectiva* [Cognitive Capitalism: Intellectual property and collective creation]. Madrid, Spain: Tranficantes de sueños.

Munck, G. L. & Verkuilen, J. (2002). Conceptualizing and Measuring Democracy. Evaluating Alternative Indices. *Comparative Political Studies 35(*1*)*, 5-34.

Musser, J. (2006). *Web 2.0: Principles and best practices*. Sebastopol, CA: O'Reilly Radar.

Nature. (2006). Britannica attacks. *Nature, 440,* 582.

Navarria, G., (2007). Reflections on beppegrillo.it: A successful attempt of innovation and active promotion of political participation through the web?. Paper prepared for the 4th ECPR General Conference, Pisa (Italy), 6-8 September, 2007. Section: "Emerging Patterns of Collective Action" Panel: "The use of ICTs for innovative forms of participation".

Negoescu, R. A., & Gatica-Perez, D. (2008). Analyzing Flickr groups. Proceedings of the 2008 international conference on Content-based image and video retrieval, July 07-09, 2008, Niagara Falls, Canada [doi>10.1145/1386352.1386406]

Negri, A. (1999). *Insurgencies: Constituent Power and the Modern State.*Minneapolis: University of Minnesota Press.

Networked Politics (2006), *Networked Politics Seminar Reader*, Barcelona. Retrieved from Networked Politics http://networked-politics.info

Nielsen, J. (1997, August 15). Community is dead; Long live mega-collaboration. In *J. Nielsen's Alertbox*. Retrieved from http://www.useit.com/alertbox/9708b.html

Nielsen, J. (2006, October 9). Participation inequality: Lurkers vs. contributors in Internet communities. In *J. Nielsen's Alertbox*. Retrieved from http://www.useit.com/alertbox/participation_inequality.html

Niesyto, J. (2010, January). Space. Paper presented at the Conference 'WikiWars'. Institute of Network Cultures and The Centre for Internet and Society, Bangalore.

Nonnecke, B., & J. Preece (2003). Silent participants: Getting to know lurkers better. In D. Fisher and C. Lueg (Eds.), *From usenet to cowebs: Interacting with social information spaces* (pp.110–132). London, UK: Springer.

Nonnecke, B., & Preece, J. (2000, April). Lurker demographics: Counting the silent. In M. Czerwinski, & F. Paterno, (Eds), *Proceedings of the CHI 2000: Human Factors in Computing* (pp. 73-80). The Hague, Netherlands: ACM Press.

Norris, P. (2001). *Digital divide*, Cambridge, UK: Cambridge University Press.

Norris, P. (2002). *Democratic phoenix: Reinventing political activist*. Cambridge, UK: Cambridge University Press.

Norris, P. (2003). Preaching to the converted? Pluralism, Participation and Party Websites. *Party Politics, 9 (*1*)*, 21-45.

Notes From Nowhere. (2003). *We are everywhere: The irresistible rise of global anti-capitalism.* London, UK: Verso Books.

Noveck, B. S. (2009). *Wiki Government: How Technology Can Make Government Better, Democracy Stronger, and Citizens More Powerful*. Brookings Institution Press.

Nualart, J. (2006, October). Free/Open sourced politics, starting points & proposals. In Networked Politics, *Networked Politics Seminar Reader*, Barcelona. Retrieved from Networked Politics http://networked-politics.info

Nunes, R. (2005) Networks, open spaces, horizontality: Instantiations. *Ephemera 5*, 297-318.

O'Mahony, S. (2002). *The emergence of a new commercial actor: community managed software projects* (Unpublished dissertation). Stanford University, CA.

O'Mahony, S. (2003). Guarding the commons: how community managed software projects protect their work. *Research Policy, 32*, 1179–1198.

O'Mahony, S. (2005). Non-profit foundations and their role in community-firm software collaboration. In J. Feller, B. Fitzgerald, S. Hissam, & K. Lakhani (Eds.), Perspectives on free and open source software (pp. 393–413). Cambridge, MA: MIT Press.

O'Mahony, S. (2007). The governance of open source initiatives: what does it mean to be

community managed?, *Journal of Management and Governance, 11*, 139–150.

O'Mahony, S., & Ferraro, F. (2007). The emergence of governance in an open source community. *Academy of Management Journal, 50*, 1079–1106.

O'Mahony, S., & Raj, N. (2006). *Mozilla: The rebirth of Firefox.* Harvard Business School Case 907015, Cambridge, MA.: Harvard Business School.

O'Mahony, S., & West, J. (2006). *The participation architecture of online production communities*. Paper presented at the Academy of Management, Atlanta, GA.

O'Sullivan. (2009). *Wikipedia: a New Community of Practice*. Burlington, VT: Ashgate Publishing,

Olson, M. (1965). *The logic of collective action: Public goods and the theory of groups*, Cambridge, MA: Harvard University Press.

O'Neil, M. (2009). *Cyberchiefs: Autonomy and authority in online tribes*. London, UK: Pluto Press.

O'Reilly, T. (2005, September 20). *What is Web2.0? Design patters and business models for the next generation of software.* Retrieved from http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html

Orlikowski, W.J. (1992). The duality of technology: Rethinking the concept of technology in Organizations. *Organization Science, 3,* 398-427.

Ortega, F. (2009). *Wikipedia: A quantitative analysis*. (Unpublished dissertation). Universidad Rey Juan Carlos, Madrid, Spain. Retrieved from http://libresoft.es/Members/jfelipe/phd-thesis

Ortega, F., & Gonzalez-Barahona, J. M. (2007). Quantitative analysis of the Wikipedia community of users. *Proceedings of the 2007 international symposium on Wikis.,* (pp. 75-86)**.** Montreal, Quebec, Canada*.*

Ortega, F., Gonzalez-Barahona, J. M., & Robles, G. (2008). On the inequality of contributions to Wikipedia. *Proceedings of the 41st Annual Hawaii International Conference on System Sciences,* pp. 304-311. Retrieved from IEEE Computer Society http://www.computer.org/plugins/dl/pdf/proceedings/hicss/2008/3075/00/30750304.pdf?template=1&loginState=1&userData=anonymous-IP%253A%253AAddress%253A%2B66.66.238.99%252C%2B%255B172.16.161.4%252C%2B66.66.238.99%252C%2B127.0.0.1%255D .

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. London, UK: Cambridge University Press.

Palfrey, J., & Gasser, U. (2008). *Born digital: Understanding the first generation of digital natives*. New York, NY: Basic Books.

Parsons, T. (1969). On the Concept of Political Power. *Proceedings of the American Philosophical Society* 107 (1963). Reprinted in Talcott Parsons, *Politics and Social Structure.* New York: Free Press, 1969.

Patomäki, H. & Teivainen, T. (2004). The World Social Forum: An open space or a movement of movements?, *Theory, Culture & Society, 21,* 145-154.

Patriotta, G. (2003). *Organizational knowledge in the making*: *How firms create, use and*

institutionalize knowledge. Oxford, UK: Oxford University Press.

Pentzold, C. (2009). Voices, One Account? The Dynamics of Co-Creation in Wikipedia. 5th ECPR General Conference. Section Title: Global Ethics in the 'War on Terror' Panel Title: Digital Media, Security and On-line Politics Many. Potsdam, 10-12 September 2009

Perens, B. (2005). *The emerging economic paradigm of open source*. Washington, DC: George Washington University. Retrieved from http://perens.com/Articles/Economic.html

Petersen, S. M. (2008). Loser Generated Content: From Participation to Exploitation. *First Monday*, 13 (3 – 3). Retrieved from http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/2141/1948

Pharr, S. J., & Putnam, R. D. (2000). *Disaffected democracies: What's troubling the trilateral countries?.* Princeton, NJ: Princeton University Press.

Pickerill, J. (2003). *Cyperprotest: Environmental Activism Online*. Manchester: University of Manchester.

Pickerill, J. (2004). Rethinking political participation: Experiments in Internet activism in Australia and Britain. In Gibson, R., Roemmele, A., & Ward, S. (Eds.), *Electronic democracy: mobilisation, organisation and participation via new ICTs* (pp.170-193). London: Routledge.

Pinchot, E., & Pinchot, G. (1993). *The end of bureaucracy and the rise of the intelligent organization.* San Francisco, CA: Berrett-Koehler.

Piore M. J., & Sabel, C. F. (1984a). *Mass production as destiny and blind decision*. Retrieved from http://ssr1.uchicago.edu/NEWPRE/Change2/piore_sabel.html

Piore, M., & Sabel, C. F. (1984b). *The second industrial divide: Possibilities for prosperity*. New York, NY: Basic Books.

Polletta, F. (2002). *Freedom is an endless meeting: Democracy in American social movements.* Chicago, IL: Chicago University Press.

Poor, N. (2005). Mechanisms of an Online Public Sphere: The Website Slashdot. *Journal of Computer-Mediated Communication (Indiana University) 10 (2)*. Retrieved from http://jcmc.indiana.edu/vol10/issue2/poor.html.

Powell, W. W. (1991). Expanding the scope of institutional analysis. In W. Powell & P. DiMaggio (Eds.),*The new institutionalism in organizational analysis* (pp. 183-203). Chicago, IL: University of Chicago Press.

Powell, W. W. (1990). Neither market nor hierarchy: Network forms of organization. *Research in Organizational Behavior, 12*, 295-336. Retrieved from http://www.stanford.edu/~woodyp/papers/powell_neither.pdf

Powell, W. W., & Clemens, E. S. (1998). *Private action and the public good*. New Haven, CT: Yale University Press.

Powell, W. W., & DiMaggio, P. J. (Eds.). (1991). *The new institutionalism in organizational analysis*. Chicago, IL: University of Chicago Press.

Powell, W., & DiMaggio, P. (Eds.) (2001). The new institutionalism in organizational analysis. Chicago, IL: University of Chicago Press.

Powell, W. W., & Steinberg, R. (2006). *The nonprofit sector: A research handbook* (2nd ed.). New Haven, CT: Yale University Press.

Preece, J. (2000). *Online communities: Supporting sociability, Designing usability*. New, York, NY: John Wiley & Sons.

Preece, J. (2001). Online communities: Usability, sociability, theory and methods. In R. Earnshaw, R. Guedj, A. van Dam, & T. Vince (Eds.), *Frontiers of human-centred computing, online communities and virtual environments.* (pp. 263-277). London, UK: Springer

Preece, J., & Maloney-Krichmar, D. (2003). Online communities. In J. Jacko & A. Sears (Eds.) *Handbook of human-computer interaction* (pp. 596-620). Mahwah, NJ: Lawrence Erlbaum.

Preece, J., & Maloney-Krichmar, D. (2005). Online communities: Design, theory, and practice. *Journal of Computer-Mediated Communication, 10.* Retrieved from http://jcmc.indiana.edu/vol10/issue4/preece.html

Preece, J., Maloney-Krichmar, D., & Abras, C. (2003). History of emergence of online communities. In B. Wellman (Ed.), *Encyclopedia of community*. Great Barrington, MA: Berkshire.

Preece, J., Nonnecke, B., & Andrews, D. (2004). The top 5 reasons for lurking: Improving community experiences for everyone. *Computers in Human Behavior, 20*, 201-223.

Priedhorsky, Chen, J., Lam, S., Panciera, K., Terveen, L.& Riedl, J. (2007, November 4-7). Creating, destroying and restoring value in Wikipedia. *Proceedings of the 2007 International ACM Conference on Supporting Group Work*. Sanibel Island, Florida. Retrieved from http://www-users.cs.umn.edu/~reid/papers/group282-priedhorsky.pdf

Rainie, L., & Packel, D. (2001). More online, doing more. Pew Internet & American Life Project. Retrieved from http://www.pewinternet.org/reports

Rao, H. (1998). Caveat emptor: The construction of nonprofit consumer watchdog organizations. American Journal of an open project. *Academy of Sociology, 103,* 912–961.

Raskin, M. (1986). *The common good: Its politics, policies, and philosophy*. New York, NY: Routledge.

Raymond. E. S. (1998). Homesteading the Noosphere. *First Monday, 3(10)*. Retrieved from http:// www.firstmonday.org/issues/issue3 10/raymond/ index.html .

Raymond, E. S. (2000). *The cathedral and the bazaar* . Retrieved from http://www.apogeonline.com/openpress/cathedral

Raymond, E.S. (2001). *The cathedral and the bazaar: musings on Linux and Open Source from an accidental revolutionary*. Sebastapol, CA: O'Reilly and Associates.

Raymond, E. S. (2007). *How to become a hacker.* Retrieved from http://www.sindominio.net/biblioweb/telematica/hacker-como.html

Reagle., J. Jr. (2004, July). Open content communities. *M/C Journal, 7*(3). Retrieved from http://journal.media-culture.org.au/0406/06_Reagle.rft.php

Reagle, J., Jr. (2005). *Do as I do: Leadership in the Wikipedia.* Retrieved from: http://reagle.org/joseph/2005/ethno/leadership.html

Reagle, J., Jr. (2007). Do as I do: Authorial leadership in Wikipedia. In WikiSym '07: Proceedings of the 2007 International Symposium on Wikis. ACM Press, New York, NY, USA. Retrieved from http://ws2007.wikisym.org/space/ReaglePaper

Reia , J. F. (2009). Alternative Licensing and the free culture movement in Sao Paulo. Free culture research workshop, October 2009. Harvard University. Retrieved from http://cyber.law.harvard.edu/fcrw/sites/fcrw/images/Reia_Free_Culture_2009__Harvard.pdf

Remix culture. (2010, May 28). In *Wikipedia, the free encyclopedia*. Retrieved May 28, 2010, from http://en.wikipedia.org/wiki/Remix_culture

Reyes, O. (2004, December). Paying for another world. In In O. Reyes, H. Wainwright, M. Fuster Morell, and M. Berlinguer (2004). *Euromovements Newsletter: European Social Forum, a debate on the challenges for its future.* Retrieved from http://www.euromovements.info/newsletter/oscar.htm

Reyes, O., Wainwright, H., Fuster Morell, M., & Berlinguer, M. (2004). *Euromovements Newsletter: European Social Forum, a debate on the challenges for its future.* Retrieved from http://www.euromovements.info/newsletter

Rheingold, H. (1993). *The virtual community. Homesteading on the electronic frontier*. Reading, MA: Addison-Wesley.

Rheingold, H. (2002). *Smart Mobs: The Next Social Revolution.* Basic Books.

Rifkin, J. (1995). *The end of work: The decline of the global labor force and the dawn of the post-market era*. New York, NY: G.P. Putnam's Sons.

Robles, G., Gonzalez-Barahona, J. M., & Merelo, J. J. (2006). Beyond executable source code: The importance of other source artifacts in software development (a case study). *Journal of Systems and Software, 79*, 1233–1248.

Röcke, A. (2009). Democratic innovation through ideas?: Participatory budgeting and frames of citizen participation in France, Germany and Great Britain. (Unpublished doctoral dissertation). Florence: European University Institute,

Rodotà S. (2004). *Tecnopolitica - La democrazia e le nuove tecnologie della comunicazione.* Roma-Bari: Editori Laterza.

Rodrigo, N. (2004). *Networks, open spaces, horizontality: Instantiations*. Retrieved from http://www.ephemeraweb.org/journal/5-2/5-2index.htm

Rodriguez, I. (2003). Mapping the emerging global order in news discourse: The meaning of globalization in news magazines in the early 1990s. In A. Opel & D. Pompper (Eds.), *Representing resistance: Media, civil disobedience, and the global justice movement* (pp. 77-94). London, UK: Praeger.

Rogers, R. (2009). *The end of the virtual: Digital methods.* Amsterdam, The Netherlands: Amsterdam University Press,

Romanelli, E. (1991). The evolution of new organizational forms. *Annual Review of Sociology, 17*: 79-103.

Römmele, A. (2003). Political parties, party communication and new information and communication technologies. *Party Politics, 9,* 7-20.

Rose, C. M. (1994). The comedy of the commons: Commerce, custom and inherently public property. In: C. M. Rose (Ed.), *Property and persuasion: Essays on the history, theory and rhetoric of ownership* (pp. 105-162). Boulder, CO Westview Press.

Rossiter, N. (2006*). Organized Networks: Media Theory, Creative Labour, New Institutions*. Rotterdam: NAi Publications.

Rucht, D. (1999). The Transnationalisation of Social Movements: Trends, Causes, Problems. In D. della Porta. H. Kriesi, & D. Rucht (Eds.). *Social Movements in a Globalizing World*. (pp. 206-22). Basingstoke: Macmillan.

Rucht, D. (2004). The quadruple 'A?. Media strategies or protest movements since the 1960s. (pp. 29-5). In: De Donk, W. van, Loader, B. D., Nixon, P. G., Rucht D. (Eds.). *Cyberprotest. New Media, Citizens and Social Movements*. New York: Routledge.

Ryan, C., & Gamson, W. A. (2009). Are Frames Enough? (from "The Art of Reframing Political debate"). In Goodwin, J., & Jasper, J. J. (Eds.). *The Social Movement Reader. Cases and Concepts.* (pp. 167-174). Malden, MA: Wiley-Blackwell.

Sack, W. (2000, January). *Discourse diagrams: Interface design for very large conversations*. Proceedings of the 33rd Annual Hawaii International Conference of System Sciences. Maui, Hawaii.

Saeed, S; Rohde, M., Wulf, V. (2009, June 25–27). *Technologies within transnational social activist communities: An ethnographic study of the European Social Forum*. Paper presented at 4th International Conference on Communities and Technologies, University Park, PA.

Sandler, T. (1992). *Collective action: Theory and applications*. Ann Arbor: University of Michigan Press.

Santos, B. de S. (2004).The University in the Twenty-First Century: Toward a Democratic and Emancipatory University Reform. Retrieved from www.ces.uc.pt/bss/documentos/university11Feb2005.pdf

Santos, B. de S. (2005a). The future of the world social forum: The work of translation. *Development, 48*, 15-22

Santos, B. d. S. (2005b). O Fórum social mundial: Manual de uso, Cortez Editora.

Santos, B. de S., (Ed.). (*2007*). *Another knowledge is possible*. London, UK: *Verso*.

Sartor, G., (2003). Il diritto della rete globale. [Law in the global network]. *Ciberspazio e diritto, 4,* 67–94.

Schneiberg, M. (2002). Organizational heterogeneity and the production of new forms: Politics, social movements and mutual companies in American fire insurance, 1990–1930. In M. Lounsbury & M. J. Ventresca (Eds.). *Research in the Sociology of Organizations, 19,* 39–

89.

Schofield, J. (2005). Flickr stands firm for the future. Guardian. Retrieved from http://technology.guardian.co.uk/online/story/0,3605,1448114,00.html

Scholz, T. (2008). Market idiology or the myth of Web 2.0. *First Monday, 13 (3*). Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2138/1945

Schuster, D. (1996). *New Community Networks: Wired for Change.* Reading, MA: Addison-Wesley Publishing Co.

Searle, J. (1990). Collective intentions and actions. In J. Searle, *Consciousness and language* (pp. 90-105). New York, NY: Cambridge University Press.

Selznick, P. (1948, Feb). Foundations of the Theory of Organizations *American Sociological. Review,* 13, (1).

Sen, J., Anand, A., Escobar, A., & Waterman, P. (Eds). (2004). *The World Social Forum: Challenging empires.* New Delhi, India: The Viveka Foundation.

Seoane, J., & Taddei, E. (2002), From Seattle to Porto Alegre: The anti-neoliberal globalization movement, *Current Sociology*, *50,* 99-122.

Shah, S. (2005). Open beyond software. In DiBona, C., Cooper D., & M. Stone, M. (Eds.). *Open Sources, 2,* (pp. 339–360). Sebastapol, CA: O'Reilly.

Shah, S. (2006). Motivation, governance & the viability of hybrid forms in open source software development. *Management Science, 52,* 1000–1014.

Shirky, C. (2008). *Here comes everybody: The power of organizing without organizations*. New York, NY: Penguin Press.

Shumate, M., Fulk, J., & Monge, P. R. (2005). Predictors of the international HIV/AIDS NGO network over time. *Human Communication Research, 31,* 482-510.

Sieberg, D. (2007). Flickr on the fly. *Torch. The University of Victoria Alumni Magazine, 28 (1)*. Retrieved from http://web.uvic.ca/torch/torch2007s/feature_5.htm

Silver, D. (2000). Looking Backwards, Looking Forward: Cyberculture Studies 1990-2000. In Gauntlett, D. Web.studies: Rewiring Media Studies for the Digital Age, (pp. 19-30). Oxford University Press.

Slashdot (2010, June 10). In *Wikipedia, the free encyclopedia*. Retrieved June 10, 2010 http://en.wikipedia.org/wiki/Slashdot

Smith, J. (2004). The World Social Forum and the challenges of global democracy. *Global Networks. 4,* 413-421.

Smith, J. (2005). Transnational social movements. In Snow, D. A, Soule, S. A. & H. Kriesi (Eds.). *The Blackwell Com panion to Social Movements* (pp. 461–488). Malden, MA: Wiley Blackwell.

Smith, J., Becker, M., & Brunelle, D. (2008) Global democracy and the World Social Forum. Boulder, CO: Paradigm Publishers.

Smith, J., Chase-Dunn, C., della Porta, D., Karides, M., Becker, M., Brunelle, D., Vazquez, R.

(2007). *Democracy and the World Social Forums*. Boulder, CO: Paradigm

Smith, J., Chatfield, C., & Pagnucco, R. (Eds.). (1997). Transnational Social Movements

Smith, J., Juris, J. S., & the Social Forum Research Collective. (2008). We are the Ones We Have Been Waiting For: the U.S. Social Forum in Context. *Mobilization 13(4*), 373-394.

Smith, J., Karides, M., Chase-Dunn, C., della Porta, D., Becker, M., Brunelle, D., Icaza G., Vazquez, R. (2007). *Global democracy and the World Social Forums*. Boulder, CO: Paradigm.

Sørensen, E. & Torfing, J. (2007). *Theories of Democratic Network Governance*. Basingstoke: Palgrave Macmillan.

Soth, A. (2007). *Where Are the Great Pictures on Flickr?*. Retrieved from http://alecsoth.com/blog/2007/08/08/where-are-the-great-pictures-on-flickr/

Spinellis, D., & Louridas, P. (2008). The collaborative organization of knowledge: why Wikipedia's growth is sustainable*. CACM, 51-8.*

Stalder, F. (2005). *Open cultures and the nature of networks*. Sarajevo, Bosnia and Herzegovina: New Media Center.

Stalder, F. (2007, October). Bourgeois anarchism and authoritarian democracies. *Changing politics through digital networks: The role of ICTs in the formation of new social and political actors and actions*. Symposium conducted at the meeting of the Journal Information Communication and Society (iCS), Florence, Italy.

Stalder, F. (2008). Bourgeois anarchism and authoritarian democracies. *First Monday, 13* (7)

Stalder, F. (2010). *Digital Commons*. In: Hart, Keith; Laville, Jean-Louis; Cattani, Antonio David (eds). *The Human Economy: A World Citizen's Guide*. Cambridge, UK, Polity Press.

Stalder, F., & Hirsh, J. (2002). Open source intelligence. *First-Monday, 7(6)*. Retrieved from http://www.firstmonday.dk/issues/issue7_6/stalder/

Stallman, R. M. (1996). *The free software definition*. Retrieved from http://www.gnu.org/philosophy/free-sw.html

Stanoevska-Slabeva, K., (2002). Toward a community-oriented design of Internet platforms. *International Journal of Electronic Commerce, 6*, 71-95.

Stigmergy. (2010). In *Wikipedia, the free encyclopedia*. Retrieved April 1, 2010 http://en.wikipedia.org/wiki/Stigmergy

Stolle, M. H., & Micheletti M. (2005). Politics in the supermarket. Political consumerism as a form of political participation. *International Political Science Review, 26*, 245-269. doi: 10.1177/0192512105053784

Strangelove, M. (2005). The empire of mind: Digital piracy and the anti-capitalist movement. Toronto, Canada: University of Toronto Press.

Struble, R. (2005) Jr., Treatise on Twelve Lights.

Stvilia, B., Twidale, M., Gasser, L., & Smith, L. (2005). Information quality in a community-based encyclopedia. In: S. Hawamdeh (Ed.), *Knowledge Management: Nurturing Culture,*

Innovation, and Technology - Proceedings of the 2005 International Conference on Knowledge Management (pp.101-113). Charlotte, NC: World Scientific.

Subirats, J. (2002). The dilemmas of an inevitable relationship: Democratic innovation and the information and communication technology. In J. Jordana (Ed.), *Governing telecommunications and the new information society in Europe* (pp.228-250). Cheltenham, UK: Edward Elgar.

Subirats, J, Brugué, Q., & Goma, R. (2002). *Redes, territorios y gobiernos. Nuevas respuestas globales a los retos de la globalización* [Networks, territories and governments. New global answers to the challenges of the globalisation]. Barcelona: Diputació de Barcelona.

Sudulich, M. L. (2006). ICT and SMO: something new?. Paper presented at the "Cortona Colloquium 2006 – Cultural Conflicts, Social Movements and New Rights: A European Challenge", 20-22 October 2006, Cortona, Italy.

Suh, B., Convertino, G., Chi, E. H., & Pirolli, P. (2009). The singularity is not near: slowing growth of Wikipedia. Proceedings of the 5th International Symposium on Wikis and Open Collaboration, October 25-27, 2009, Orlando, Florida.

Surowiecki, J. (2005) *The Wisdom of Crowds.* New York: Anchor Books.

Tapscott, D. (2008). *Grown up digital: How the net generation is changing your world.* Columbus, OH: McGraw-Hill.

Tapscott, D., & Williams, A. (2007). *Wikinomics. Portfolio*. New York, NY: Penguin.

Tarrow, S. (1997). *El poder en movimiento: los movimientos sociales, la acción colectiva y política.* [The power in movement: the social movements, the collective and political action]. Madrid, Spain: Alianza.

Teachout, Z. & Streeter, T. (2007). *Mousepads, Shoe Leather, and Hope Boulder.* Colorado: Paradigm Publishers.

Teivainen, T. (2002). The World Social Forum and global democratisation: Learning from Porto Alegre. *Third World Quarterly, 23,* 621-632.

Teivainen, T. (2003, March 28). The World Social Forum: Arena or actor ?. In, J. Sen, A. Anand, A. Escobar, & P. Waterman,(Eds.), 2004 – World Social Forum : Challenging Empires. New Delhi : Viveka

Terdiman, D. (2005, March 8). Wiki becomes a way of life. *Wired News*. Retrieved from http://www.wired.com/culture/lifestyle/news/2005/03/66814

Terranova, T. (2000). Free labor: Producing culture for the digital economy. *Social Text 18*, 33-58.

Terranova, T. (2004). Network culture: Politics for the information age. Ann Arbor, M.I.: Pluto Press.

Tilly, C. (1983). Speaking Your Mind Without Elections, Surveys, and Social Movements. *The Public Opinion Quarterly, 47(4),* 461-478 .

Tilly, C., (1991). *Grandes estructuras, procesos amplios, comparaciones enormes*. [Great structures, ample processes, enormous comparisons]. Madrid, Spain: Alianza.

Tkacz, N. (2007). *Power, Visibility, Wikipedia. Southern Review, 40, (2),* 5-19.

Toffler, A. (1980). *The Third Wave*. Bantam Books

Torrone, P. (2004). Interview with Caterina Fake from Flickr. Retrieved from http://www.engadget.com/2004/12/03/interview-with-caterina-fake-from- flickr

Touraine, A. (1978). *La voix et le regard.* [The voice and the Eye]. Paris, Berners France: Editions de Seuil.

Touraine, A. (1981). *The voice and the eye: An analysis of social movements.* Cambridge, UK: Cambridge University Press.

Touraine, A. (1985). An introduction to the study of social movements. *Social Research, 52*, 749-88.

Touraine, A. (2008). An Introduction to the study of social movements. In Ruggiero, V., & Montagna, N., (Eds.) *Social Movements. A Reader.* (pp. 212-217.) London and New York: Routledge.

Torvalds, L., & Diamond, D. (2001). *Just for fun: The story of an accidental revolutionar*y. New York, New York, United States: HarperCollins.

Trechsel, A. H. (2007). E-voting and Electoral Participation. (pp. 159-182). In Claes de Vreese (Ed.). Dynamics of Referendum Campaigns – An International Perspective, London: Palgrave.

Trechsel, A., Kies, R., Mendez, F., & Schmitter P. (2003). *Evaluation of the use of new technologies in order to facilitate democracy in Europe: E-democratizing the parliaments and parties of Europe*. Retrieved from http://www.erepresentative.org/docs/6_Main_Report_eDemocracy-inEurope-2004.pdf.

Troll (Internet). (2010). In *Wikipedia, the free encyclopedia*. Retrieved April 1, 2010 from http://en.wikipedia.org/wiki/Internet_troll

Tschang, F. T. & Comas, J. (2010). Developing virtual worlds: The interplay of design, communities and rationality*. First Monday, 15,* (5). Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2957/2525

Tsoulkas, H. (1996). The firm as a distributed knowledge system: A constructionist approach", *Strategic Management Journal, 17*, 11-25.

Turkle, S. (1995). *Life on the Screen: Identity in the Age of the Internet.* New York: Simon & Schuster.

Turner, F. (2005). Where the counterculture met the new economy: The well and the origins of virtual community. *Technology and Culture 46,* 485-512. Retrieved from http://www.stanford.edu/~fturner/Turner%20Tech%20&%20Culture%2046%203.pdf.

Turner, F. (2006). *From counterculture to cyberculture: Stewart Brand, the Whole Earth Network, and the rise of digital utopianism*. Chicago, IL: University of Chicago Press.

Tzouris, M. (2002). *Software freedom, open software and the participant's motivation – a multidisciplinary study*. London, UK: London School of Economics and Political Science.

Uzzi, B. (1996). The sources and consequences of embeddedness for the economic performance of organizations: The network effect. *American Sociological Review, 61,* 674-698.

Vaccari, C. (2008). From the Air to the Ground: The Internet in the 2004 US Presidential Campaign *New Media & Society, 10(*4*),* 647-65.

Vaccari, C. (2009). Technology is a Commodity. The Internet in the 2008 United States Presidential Election. Paper to be presented at the conference Citizen Politics: Are The New Media Reshaping Engagement?. Barcelona, 28-30 May 2009.

Vaidhyanathan, S. (2009). *The Googlization of Everything: How One Company is Disrupting Culture, Commerce, and Community — And Why We Should Worry.*

Val Laer, J., & Van Aelst, P. (2010). Cyber-protest and civil society: The internet and action repertoires in social movements. In Y. Jewkes & M. Yar (Eds.), *Handbook of Internet crime* (pp. 230-254). Devon, UK: Willan.

Van Aelst, P. & Walgrave, S. (2004). *New Media, new movements? The role of the Internet in shaping the anti globalization movement.* In Van De Donk, W., Loader, B., Rucht, D., & Nixon, P. *Cyberprotest: New Media, Citizens and Social Movements.* London: Routledge.

van den Donk, W., Loader, B., Nixon P., Rucht, D. (2004). *Cyberprotest. New Media, citizens and social movements.* New York, NY: Routledge.

Van Dijck, J., & Nieborg, D. (2009). Wikinomics and its discontents: a critical analysis of Web 2.0 business manifestos. *New Media Society, 11(*5*)*, 855874. doi: 10.1177/1461444809105356.

van Dijk, J.A.G.M. (1996). Models of democracy: behind the design and use of New Media in politics. Communication Institute for Online Scholarship, Inc. EJC/REC Vol. 6, No. 2. Retrieved from http://www.cios.org/EJCPUBLIC/006/2/00629.HTML

van Zwol, R. (2007, September) Flickr: Who is looking? *Proceedings of the 2007 IEEE / WIC / ACM International Conference on Web Intelligence (WI 2007),* Silicon Valley, CA. Retrieved from http://research.yahoo.com/pub/515

Vedel, T. (2003). Political communication in the age of the Internet. *Routledge Research in Cultural and Media Studies, 10*, 41-59.

Vedres, B., Bruszt, L., & Stark, D. (2005a). Organizing technologies: Genre forms of online civic association In Eastern Europe. *The Annals of the American Academy of Political and Social Science 597*, 171-188. doi: 10.1177/0002716204270504

Vedres, B., Bruszt, L., & Stark, D. (2005b). Shaping the web of civic participation: Civil society websites in Eastern Europe*. The Journal of Public Policy*, *25*, 149-163.

Verba, S., Schlozman, K. L., & Brady, H. (1995). *Voice and equality: Civic voluntarism in American politics*. Cambridge, MA: Harvard University Press.

Vertola, V. (2007). Internet Governance: a new beast in Globaltown. In Fuster Morell, M., Berlinguer, M, & Wainwright, H. (Eds.) *Reader Networked Politics: Rethinking political organizing in the age of movements and networks*. Retrieved from http://www.networked-politics.info/

Viégas, F. B., Wattenberg, M., & Dave, K. (2004). Studying cooperation and conflict between authors with history flow visualizations. *CHI*, pp. 575-582. Retrieved from http://alumni.media.mit.edu/~fviegas/papers/history_flow.pdf

Viégas, F., Wattenberg, M., & Mckeon, M. (2007) The Hidden Order of Wikipedia. *EOnline Communities and Social Computing,* 445-454.

Viegas, F. B., Wattenberg, M., Kriss, J., & van Ham, F. (2007). Talk before you type: Coordination in Wikipedia. Visual Communication Lab, IBM Research. *Proceedings of the 40th Hawaii International Conference on System Sciences.*

Vise, D. & Malseed, M. (2005). *The Google Story*. Delacorte Press.

von Hayek, F.A. (1945). The use of knowledge in society. *American Economic Review, 35*, 519-530.

von Hippel, E. (2005). *Democratizing innovation*. Cambridge, MA: MIT Press.

von Hippel, E., & von Krogh, G. (2003). Open source software and the "private-collective" innovation model: Issues for organization science. *Organization Science, 14,* 209-223.

Voss, J. (2005) Measuring Wikipedia. *Proceedings 10th International Conference of the International Society for Scientometrics and Informetrics.* Stockholm, Sweden.

VV.AA (2006). *Copyleft: Manual de uso*. Madrid: Traficantes de sueños.

Wagstaff, J. (2004). Wikipedia: It's wicked. *Far Eastern Economic Review 167,* 38-39.

Waguespack, D., & Fleming, L. (2004). *Penguins, camels, and other birds of the feather: the emergence of leaders in the Open Innovation Communities.* Retrieved from http://faculty.haas.berkeley.edu/elf/ECON222/Waguespack Fleming.pdf

Wainwright, H. (1993). *Arguments for a new left. Answering the free market right*. New York, NY: Blackwell.

Wainwright, H. (2004). The European Social Forum come to London. In In O. Reyes, H. Wainwright, M. Fuster Morell, and M. Berlinguer (2004). (2004). *Euromovements Newsletter: European Social Forum, a debate on the challenges for its future.* Retrieved from http://www.euromovements.info/newsletter/wainwright.htm

Wainwright, H. (2005). *Report on the methodology of the WSF and its possible relevance for the 2006 ESF Transnational Institute*: Retrieved from http://tni.org/article/report-methodology-wsf-and-its-possible-relevance-2006-esf

Wales, J. (2005, December). *Wales talks Wikipedia*. Retrieved from http://writingshow.com/

Wallerstein, I. (2005). The dilemmas of open space: The future of the WSF. *International Social Science Journal*, *182.* Retrieved from http://www.openspaceforum.net/twiki/tiki-read_article.php?articleId=25

Weber, M., (1946). Bureauacracy. In H. Gerth & C. W. Mills (Eds.), *From Max Weber* (pp.196-244). New York, NY: Oxford University Press,

Weber, M. (1978). *Economy and Society: An Outline of Interpretive Sociology*, Guenther Roth and Claus Wittich, eds. (Berkeley: University of California Press, 1978), vol. I, (pp. 100–03).

Weber, S. (2004). *The success of open source*. Cambridge, MA: Harvard University Press.

Wellman, B. (1997). An electronic group is virtually a social network. In Kiesler, S. (Ed.) Culture of the Internet. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers, 179-205.

Wellman, B. (2001) Physical place and cyberplace: The rise of personalized networking. *International Journal of Urban and Regional Research 25*, 227-52.

Wellman, B., & Gulia, M. (1999). The network basis of social support: A network is more than the sum of its ties. In B. Wellman (Ed.), *Networks in the global village* (pp. 83-118). Boulder, CO: Westview Press.

Werry, C. (1999). Imagined electronic community: representations of virtual community in contemporary business discourse. *First Monday, 4 (9)*. Retrieved from http://firstmonday.org/issues/issue4_9/werry/

West, J., & O'Mahony, S. (2008), The role of participation architecture in growing sponsored Open Source communities. *Industry and Innovation, 15*, 145–168.

Whitaker, C. (2004). The WSF as an open space. In J. Sen, A. Anand, A. Escobar, & P. Waterman (Eds.), *The World Social Forum: Challenging empires* (pp. 111-121)*,* New Delhi, India: The Viveka Foundation.

Whittaker, S, Terveen, L, Hill, W., & Cherny, L. (1998, November 14-18). The dynamics of mass interaction. *Proceedings of CSCW 98, the ACM Conference on Computer-Supported Cooperative Work,* pp. 257-264. Seattle, WA.

Wu, M. (2010). *The economics of 90-9-1. Using economics techniques to analyze the participation data across hundreds of communities segmented by industry, audience type, and community focus*. Retrieved from http://lithosphere.lithium.com/t5/Building-Community-the-Platform/bg-p/MikeW/label-name/90-9-1

Yan, Y. (2007). *A Study of Flickr Users and Groups* (Unpublished doctoral dissertation). University of Sheffield.

Yoo, Y. & Alavi, M. (2004). Emergent leadership in virtual teams: what do emergent leaders do?. *Information and Organization, 14(*1*)*, 27–58.

YouTube. (2010). In *Wikipedia, the free encyclopedia*. Retrieved April 1, 2010 from http://en.wikipedia.org/wiki/YouTube

Zachte, E. (2009, September). *Wikipedia in numbers*. Presentation at Wikimania 2009. Buenos Aires, Argentina. Retrieved from http://wikimania2009.wikimedia.org/wiki/Proceedings:144

Zald, M. N. & Ash, R. (1966). Social Movement Organizations: Growth, Decay and Change. *Social Forces, 44,* 327-341.

Zatz, N. (1998). Sidewalks in cyberspace: Making space for public forums in the electronic environment. *Harvard Journal of Law & Technology, 12*, 149.

Zimmermann, A., & Erbe, J. (2002). *Internet - a New Potential for European Political Communication?* Integrated Crossnational Report European Union, Switzerland, Germany, Spain, France, Italy, Netherlands, United Kingdom" (Report for the European Commission).

Retrieved from http://europub.wz-berlin.de/Data/reports/D4-2-Internet-Report.pdf

Annex I. Codebook for the large *N* data collection

The coding process and data analysis followed the sequence steps:

1) Collect data as the indicators of the codebooks (see codebook below)

2) Sum the indicators by sub-dimensions and sum sub-dimensions to extract the dimensions
The following indexes were used to calculate the dimensions
Information quality and usability = (Information quality / 5) + (Information search / 8) + (Results Accessible Test / 761) + (Number-Language Interface / 50)
The sum of the indicators of information quality and usability previously required the unification of the scale, which was calculated with the formula: *x/Maxim of X*.
Technical usability and accessibility = Sum 3 indicators
Transparency = (Transparency information (6 indicators) + (Transparency contacts (4 indicators)) + (Knowledge transparency (3 indicators))
Knowledge policy = Sum 2 indicators
Participative platform = Mechanism (6 indicators) + Protocols (4 indicators with maxim 5 value) + Integration information (4 indicators)
Participative provision = one indicator

3) Calculate the descriptive statistics of the dimensions (frequency)

4) Calculate the correlation between the dimensions and sub-dimensions

5) Calculate the correlations between the dimensions and axes of infrastructure governance

6) Extract the models of infrastructure governance and the typology of collaboration (see the index below)

7) Calculate the correlations between the axis of infrastructure governance and dependent variable (size, collaboration and self-community governance)
The following indexes were used to calculate the dependent variable
Size growth = Alexa 2010 – Alexa 2008
Links growth = Alexa Links 2010 – Alexa Links 2008
Level of collaborativeness = (Basic Unit x 2) + Tags + Integration + Latent common goal
Self-governance = Decision-making policies + decision-making roles

8) Create the variable models of infrastructure governance and typology of collaboration

Models of infrastructure governance

	Open versus closed	**Formal versus informal**	**For-profit versus non-profit**	**Net enabler versus back box**
Enterprise	1	Not applicable	0	2
Corporation	1	Not applicable	0	0
University	1	Not applicable	1	0, 1 or 2
Foundation	2	0	1	2
Assembly	3[294]	1	1	1 or 2

Typology of collaboration

	Basic unit	**Meta data**
Album	0	0 or 1
Collage	1	0 or 1

9) Calculate the correlation between models of infrastructure governance and dependent variable (size, collaboration and self-community governance)

II. Codebooks

It is worth mentioning some of the practicalities and protocols followed during data collection. The program used for data collection and statistical analysis was SPSS. Before starting the coding, it was useful to navigate the platform to become familiar with it.

When the information was provided in several linguistic platforms, the larger one was coded (generally the English one, but not always).

As a general rule, the values of the codebook are ordered from less democratic to more democratic.

The missing data was referred to as 666.

294 P2P Foundation is classified as an assembly model although legally it is a foundation.

Codebook Dependent Variables

Variable Name	Measure	Comments
URL – Domain name		
Date coding		Data collection took place in May 2008 and January 2010
Dependent variables		
Size		
Dimension of works		
Number of basic units (i.e., total number of uploaded files (including images, videos, open educational resources or articles); collaboratively written articles, software packages or working groups (such as wikis created for wiki farms or projects for working spaces)	Total number	Collected from the site information. This data is frequently missing. Additionally, there are several limitations in terms of comparing such different types of basic units. When the cases produce several types of units (particularly the type of working groups) they are summed; except for the wikis in which only articles and not uploaded material was considered
Platform		
Number of unique readers	Total number	Collected from the site information. In some cases such as FLOSS, the "audience" or non-participants are comprised not only of the platform visitors, but also of the number of users of the software package.
Registered users/ Accounts opened / Subscriptions / Developers	Total number	Collected from the site information. Section statistics.
Number of top contributors	Total number	When the total number of top contributors was not available, the number of administrators was used. When there were administrators and active contributors (according to the site), a sum between them was used.
Provision Team		
Promoters, founders, board or core team and employees	Approximately 5 Approximately 25 More than 100	Collected from the site information. Section statistics.

Visibility		
Alexa ranking - May 2008	Total number	hhtp//www.alexa.com The first site in the ranking is the most visible.
Alexa ranking - January 2010	Total number	
Connectivity		
Alexa number of links - May 2008	Total number	
Alexa number of links - January 2010	Total number	
Type of collaboration		
Collaborative or individual basic unit	0 - Individual 1 - Collaborative	This is connected to the type of authority.
Meta data	0 - Pre-established categories without the possibility of changing it 1 - Tagging	Tags were introduced in 2003. Old cases do not have them.
The complexity in terms of the integration of activity contributions	0 - Individual actions together (Social (personal) networking) 1 - Putting together pieces. Archives of multimedia pieces, directories, maps or libraries 2 - Working in groups such as techno-political tools (activism networking), Information node or research tool. 3 - Write something together (Software package, dictionaries or encyclopedias)	
In the discourse of goals, is there the building of a common thing? (latent common goal)	0 - No 1 - Yes	Looked to the mission sentence
Community governance		
Who decides the community rules on content?	0 - Provider establishes them 1 - Community	
Who assigns the different community roles?	0 - Provider establishes them 1 - Community	
Other information		
Provider model	0 - Universities (closed and non-profit)	

	1 - Corporation 2 - Enterprise 3 - Foundation 4 - Assembly	
Type of provider	0 - Owned by a for-profit organization Not owned by a for-profit organization 1 - University 2 - Foundation 3 - Political actor 4 - Spiritual group 5 - Person	Connected to commercialization
Year	year	According to the year of foundation specified from the information on the web, year of domain registration or starting year of Internet presence Archive
Commercialization		
Selling merchandise	0 - Yes 1 - No	
Collecting donations	0 - Yes 1 - No	
Sponsors	0 - Yes, commercial sponsor 1 - Public Institution (University) Sponsor 2 - No Sponsors	
Paid premium services or/and production of paid (not free) products (i.e., books, CDs, Web 2.0 services)	0 - Yes 1 - No	
Use of advertisements in the website	0 - Yes 1 - No	
Commercial use of digital threads	0 - Yes, allowed to use digital threads for the administrative body for commercial purposes 1 - No, any condition explicitly required (other than having a respectful attitude and the use of digital threads for	

	technical purposes)	
Offline activities		Only the ones directly promoted by the OCC are considered
Is there a headquarters?	0 - No 1 - Yes	
Are there organized administrative meetings?	0 - No 1 - Yearly 2 - Trimester 3 - Monthly 4 - Weekly 5 - Multiple offline life	
Are there organized seminars and conferences (promoted by the space provider to the general public)?	0 - No 1 - Yearly 2 - Trimester 3 - Monthly 4 - Weekly 5 - Multiple offline life	In the OCC, they are linked to a political process or broad goals; the meetings are not related to the "community of users of the platform" but to followers of the broad goal.
Are there organized meetings (promoted by the community)?	0 - No 1 - Yearly 2 - Trimester 3 - Monthly 4 - Weekly 5 - Multiple offline life	Such as meetups

Dimension of works		
Number of basic units (i.e., total number of uploaded files (including images, videos, open educational resources or articles); collaboratively written articles, software packages or working groups (such as wikis created for wiki farms or projects for working spaces)	Total number	Collected from the site information. This data is frequently missing. Additionally, there are several limitations in terms of comparing such different types of basic units. When the cases produce several types of units (particularly the type of working groups) they are summed; except for the wikis in which only articles and not uploaded material was considered
Platform		
Number of unique readers	Total number	Collected from the site information. In some cases such as FLOSS, the "audience" or non-participants are comprised not only of the platform visitors, but also of the number of users of the software package.
Registered users/ Accounts opened / Subscriptions / Developers	Total number	Collected from the site information. Section statistics.
Number of top contributors	Total number	When the total number of top contributors was not available, the number of administrators was used. When there were both administrators and active contributors (according to the site), a sum between them was used.
Provision Team		
Promoters, founders, board or core team and employees	Approximately 5 Approximately 25 More than 100	Collected from the site information. Section statistics.
Visibility		
Alexa ranking - May 2008	Total number	hhtp//www.alexa.com The first site in the ranking is the most visible.
Alexa ranking - January 2010	Total number	
Connectivity		
Alexa number of links - May 2008	Total number	

Alexa number of links - January 2010	Total number	
Type of collaboration		
Collaborative or individual basic unit	0 - Individual 1 - Collaborative	This is connected to the type of authority.
Meta data	0 - Pre-established categories without the possibility of changing it 1 - Tagging	Tags were introduced in 2003. Old cases do not have them.
The complexity in terms of the integration of activity contributions	0 - Individual actions together (Social (personal) networking) 1 - Putting together pieces. Archives of multimedia pieces, directories, maps or libraries 2 - Working in groups such as techno-political tools (activism networking), Information node or research tool. 3 - Write something together (Software package, dictionaries or encyclopedias)	
In the discourse of goals, is there the building of a common thing? (latent common goal)	0 - No 1 - Yes	Looked to the mission sentence
Community self-governance		
Who decides the community rules on content?	0 - Provider establishes them 1 - Community	
Who assigns the different community roles?	0 - Provider establishes them 1 - Community	
Other information		
Provider model	0 - Universities (closed and non-profit) 1 - Corporation 2 - Enterprise 3 - Foundation 4 - Assembly	
Type of provider	0 - Owned by a for-profit organization	Connected to commercialization

	Not owned by a for-profit organization 1 - University 2 - Foundation 3 - Political actor 4 - Spiritual group 5 - Person	
Year	year	According to the year of foundation specified from the information on the web, year of domain registration or starting year of Internet presence Archive
Commercialization		
Selling merchandise	0 - Yes 1 - No	
Collecting donations	0 - Yes 1 - No	
Sponsors	0 - Yes, commercial sponsor 1 - Public Institution (University) Sponsor 2 - No Sponsors	
Paid premium services or/and production of paid (not free) products (i.e., books, CDs, Web 2.0 services)	0 - Yes 1 - No	
Use of advertisements in the website	0 - Yes 1 - No	
Commercial use of digital threads	0 - Yes, allowed to use digital threads for the administrative body for commercial purposes 1 - No, any condition explicitly required (other than having a respectful attitude and the use of digital threads for technical purposes)	
Level of formality versus informality provider	0 - Yes, there is a board	

Among the open administrative space: Existence of a board in the administrative body (a limited number of people can integrate the board) This measures the level of formality	1 - No, there is not a board (although there is tasks distribution)	
Offline activities		Only the ones directly promoted by the OCC are considered
Is there a headquarters?	0 - No 1 - Yes	
Are there organized administrative meetings?	0 - No 1 - Yearly 2 - Trimester 3 - Monthly 4 - Weekly 5 - Multiple offline life	
Are there organized seminars and conferences (promoted by the space provider to the general public)?	0 - No 1 - Yearly 2 - Trimester 3 - Monthly 4 - Weekly 5 - Multiple offline life	In the OCC, they are linked to a political process or broad goals; the meetings are not related to the "community of users of the platform" but to followers of the broad goal.
Are there organized meetings (promoted by the community)?	0 - No 1 - Yearly 2 - Trimester 3 - Monthly 4 - Weekly 5 - Multiple offline life	Such as meetups

Codebook Independent Variables

Code	Indicator by Dimension	Measure	Comments
1	**<u>Dimension provision of information and usability</u>**		
1.1	**Evaluation of the quality of the information**		
1.1.1	Present the number of visits – clicks received by piece	0 - No 1 - Yes	
1.1.2	Valorization by participation (To highlight that an information has been the result of a high number of interventions, raised many reactions or is recent (recent changes))	0 - No 1 - Yes	
1.1.3	Voting system (possibility of explicitly adding a valuation of an information piece)	0 - No 1 - Yes	
1.1.4	Prize system (Prizes awarded for a piece of information that has achieved a set of valuation criteria	0 - No 1 - Yes	
1.1.5	Visualization by valorization (location of the information according to the evaluation by the community on the front page (i.e., showing the more highly valuated ones first).	0 - No 1 - Yes	This does not include recent changes.
1.2	**Information search and use**		
1.2.1	Internal search engine	0 - No 1 - Yes	Only two cases did not have it.
1.2.2	Website map	0 - No 1 - Yes	
1.2.3	Static menu	0 - No 1 - Yes	Only three cases did not have it.
1.2.4	Latest news	0 - No 1 - Yes	This is not the last changes section.

1.2.5	RSS (this refers to sending a notification after a change is introduced)	0 - No 1 - Yes	
1.2.6	Explanation of the website contents (Including a narration that introduces the content of the website, not only a list of the content	0 - No 1 - Yes	
1.2.7	To classify the content by theme	0 - No 1 - Yes	
1.2.8	Newsletter	0 - No 1 - Yes	
1.3	**Accessibility applications**		
1.3.1	Result Accessibility Test http://www.tawdis.net/[295] 1 x XXX + 2 x XX + 3 x X Priority AAA	Total number	The test changed from 2008 to 2010.
1.4	**Multilingualism**		
1.4.1	Number of languages in which the interface is provided	Total number	
2	**Technical usability and accessibility**		
2.1.	Frequently asked (technical) questions	0 - No 1 - Yes	
2.2	Forums for welcoming new participants and for technical question-solving	0 - No 1 - Yes	
2.3	Contextual help for problematic applications (the latter refers to specific functionalities of a website that are frequently mistakenly used by users) and/or the presence of a help section and a user guide	0 - No 1 - Yes	This is very frequent.
3	**Transparency and accountability**		

295 The test used was the Web Content Accessibility Guidelines defined by the World Wide Web Consortium (http://tawdis.net). The test analyzes the entire content of the platform and detects three types of accessibility problems: Priority 1) impossibility of access for some users; Priority 2) difficulty of access; Priority 3) some access difficulties. The indicator used was the ponderate sum of the test result in the three categories (Number of Priority 1 problems x 3) + (Number of Priority 2 problems x 2) + (Number of Priority 3 problems). There are different levels of analysis, and the one used was AAA.

3.1	**Provision of a series of information**		
3.1.1	Defined statutes or regulations of the administrative body	0 - No 1 - Yes	
3.1.2	Information concerning the different administration roles and body/people in charge	0 - No 1 - Yes	
3.1.3.	Information on the funding policy or finance report	0 - No 1 - Yes	
3.1.4	Information on legal status	0 - No 1 - Yes	
3.1.5	Provision of information referring to the website itself (statistics)	0 - No 1 - Yes	
3.1.6	Information on the server's physical placement	0 - No 1 - Yes	
3.2	**Presence of contact and possibility of joining online and offline**		
3.2.1	Webmaster's e-address (webmaster refers to the person/body in charge of the technical installation and maintenance tool)	0 - No 1 - Yes	
3.2.2	General information e-address	0 - No 1 - Yes	
3.2.3	Administrative body e-address	0 - No 1 - Yes	
3.2.4	Information on reachability of the administration (physical contact)	0 - No 1 - Yes	
3.3	**Indicators of transparency in the knowledge policy**		
3.3.1	Presence of license	0 - No 0, 5 - Yes, presence of a license 1 - Yes,	

		license with a link to an explanation	
3.3.2	Data policy information on personal data (digital threads) policy	0 - No 1 - Yes	
3.3.3	Section dedicated to explaining the authorship and conditions of use of the community outcomes	0 - No 1 - Yes	
4	**<u>Knowledge policy</u>**		
4.1	Type of license of the overall platform (not of the content)	0 - Copyright 1 – Copyleft (I.e. Creative commons or GPL)	
4.2	Platform based on FLOSS	0 - No 1 - Yes	
5	**<u>Openness to participation in the networking platform</u>**		
5.1	**Provision of multi-interactive mechanism296**		Depending on the goal of the community, some mechanisms do not make sense.
5.1.1	Possibility of intervening in forums/chats (not directly associated to content)	0 - No 1 - Yes	
5.1.2	Possibility of editing web pages (further than the basic unit)	0 - No	

296 As an transversal aspect, it is significant to distinguish, on the one hand, the openness for directly intervening in building the knowledge package (linked to mechanisms such as editing pages, uploading materials, tags – thematic classification, creation of new groups or collective content) and, on the other hand, the openness to participating in the communication channels used to coordinate the action or/and exchange opinions (linked to mechanisms such as chats, news blogs, mailing lists or hyperlinks to other platforms). In the case of Facebook and BeppeGrillo, this distinction is not applicable. This is linked to the question that these two cases are less oriented to building a knowledge package than to communicating.

		1 - Yes	
5.1.3	Possibility of creating collective content	0 - No 1 - Yes	
5.1.4	Possibility of adding comments to a specific section of the content	0 - No 1 - Yes	
5.1.5	Possibility of uploading materials	0 - No 1 - Yes	
5.1.6	Tags: Possibility of adding or intervening in the categorization/taxonomy system	0 - No 1 - Yes	
5.2	**Protocols** of technology use that guide the participation in the networking platform		
5.2.1	All pages are readable versus a section reserved for members only	0 - Section reserved for members 1 - All pages are readable	
5.2.2	Policy of registration: Automatic registration versus moderated registration	0.5 - Not applicable 0 - Moderated registration 1 - Automatic registration	
5.2.3	Policy of participation: Automatic participation versus moderated participation	0 - Moderated participation previous to publishing 0,5 - Moderated after publishing 1 - Automatic participation	
5.2.4	Permissions policy by default (author/editor/administrator)	0 - Reader 1 - Author: You can create your content	

		2 - Editor: You can edit others' content	
5.3	**Provision of information that facilitates integration/participation**		
5.3.1	Presentation of the agenda/goals of the website	0 - No 1 - Yes	
5.3.2	History: Presentation of historical/chronological evolution (this could be especially useful to integrate new people into the community)	0 - No 1 - Yes	
5.3.3	Invitation to participate and present (listing) the relevant channels	0 - No 1 - Yes	
5.3.4	Calendar/planning next activities	0 - No 1 - Yes	
6	**<u>Openness to participation in the provider space</u>**		
6.1	Possibility for participants in the networking platform to candidate/be part of the web administrative body	1 - Yes, by doing a capital inversion (Company) Becoming a member of an institution (University) 2 - Yes, according to fulfilling merits (Foundation) Yes, becoming a member of an association (may require the payment of a low fee) (Who pays is part of it) 3 - Yes,	This is rather difficult to establish because it mixes types of groups (commercial or not; formal or informal) with the possibility of participating in the administratio n of the body and, depending on the group, the participation in the administratio n space could take place in one form or

		participation by self-selection (everybody who wants to join) (Assembly)	another.

Annex II. Documentation of Empirical Material: Material per OCC case studies

I. Assembly model: Social forums – assembly model: Main data collection 2007 - 2008

Social forum materials

Online ethnography

Conducted on the mailing list and online spaces at openesf.net of the Web team 2008, openesf team 2008, fse-esf mailing list, Nordic ESF Documentation and Nordic Web group; of the websites fse-esf.org, openesf.net, openelibrary.info and esf2008.org, and weekly chat meetings with the ESF Web team

Participative observation

In the *EPAies* and ESF Web team meetings at Lisbon, April 2007; Stockholm, September 2007; Istanbul, December 2007; Berlin, February 2008; and Kiev, June 2008; and during the World Social Forum 2009 (Betlem do Para, Brazil).

Interviews

Stockholm EPA: September 2007

Alfred Klandestino – Nordic Esf2008 (event web) webmaster. Interview: Democratic dimensions of a website, 16 September 2007.

Dimitri Moraira – Greek openesf.net webmaster. Interview: Democratic dimensions of a website, 16 September 2007.

Lennart Borgman – Nordic technician on the ESF Web team. Interview: Democratic dimensions of a website, 16 September 2007.

Istanbul EPA: December 2007

Christophe Aguiton – French activist. Interview on Openesf, 13 December 2007.

Christophe Ventura – France. Interview on openesf.net, 13 December 2007

Giovana Faccetta – Italian living in Glasgow and member of Education Network and Collective Bella Ciao, UK. Interview on the openesf.net, 13 December 2007.

Greek from Alis, 27 years old. Interview on openesf.net, 13 December 2007.

Labor activist from Turkey. Interview on openesf.net, 13 December 2007.

Marco Berlinguer – Italian. Transform!. Interview on openesf.net, 13 December 2007.

Piero Bernocchi – Covas. Italian. Interview on openesf.net, 13 December 2007.

Pierre Barge – French syndicalist. Informal Interview, Istanbul EPA, December 2007

Berlin EPA: February 2008

Indymedia, Thessaloníki. Ex-members. Notes on informal conversation with Indymedia, 24 February 2008.

Mariangela Casalucci – Italian leaving in Greece. Collective Bella Ciao. Notes from an informal conversation, 23 February 2008.

Sindicalist from the CGIL – Italian. Notes on informal conversation, 23 February 2008.

A web is a democratic tool when ... A one-question interview developed in the entrance door of the European Preparatory Meeting, 23 February 2008.

Mariangela Casalucci – Italian leaving in Greece. Collective Bella Ciao. Interview, 23 February 2008.

August Nilsson – Member of Malmö mobilization group. Interview, 23 February 2008.

Anastasia Theodorakopoulou – Greek Synapsismos member. Interview, 23 February 2008.

Panayotis Yulis – Greek. Grassroots Syndicate. Interview, 23 February 2008.

Bruno Ciccaglione – Roman. Rossinoto. Interview, 23 February 2008.

Merlin Ap Ceridwen – English. Cardiff Social Forum. Interview, 23 February 2008.

Member of the Rosa Luxembourg Foundation. Interview, 23 February 2008.

Angelo Tria – Italian. Transform!. Interview, 23 February 2008.

Kiev EPA: June 2008

Franco Russo – Italian. Rifondazione Comunista. Interview, 8 June 2008.

Pierre George – ESF web team and Communication Commission International Council WSF. Interview, 8 June 2008.

Others interviews not developed during EPAs:

Lorenzo Di Tommasi – Web designer of openelibrary.info. Interview consultation on codebook design. Rome, November 2007.

Dimitri Moraira – openesf.net and esf2008 webmaster. Informal chat interview. Post-Kiev EPA, 9 June 2008.

Tammy Bang Luu – USA Social Forum and National Planning Committee. Interview. Los Angeles, August 2008.

Mark Randazzo – Founder for Trade and Globalization. Informal interview. San Francisco, 10 July 2008.

Mallory Knodel – May First / People Links and US Social Forum 2010 Information and Communications Technology (ICT) Working Group. Interview: New York, 16 October 2009.

Jamie McClelland – Co-founder of May First/People Link. Informal Interview. New York, 18 October 2009.

Relevant documentation consulted

Significant e-mails

Mirek Prokes – E-mail “EPA Kiev - Working group enlargement.” Sent to openesf.net e-list, 18 June 2008.

Tord Björk – E-mail “fse-esf Mobilising 20 000 to ESF 2008!” (use of Facebook), June 2008.

Tord Björk – <tord.bjork@mjv.se> [fse-esf] “Facebook mobilisation for ESF 2008”, 10 February 2008.

Mikael Book – E-mail sent to fse-esf e-list. “Librarians network meeting during the EPA in Stockholm”, 3 September 2007.

Carole Faure – (altermundo)" <carole.faure@altermundo.info> <fse-esf@lists.fse-esf.org> [fse- esf] “Call for support of the project memory”, 03 March 2008.

Françoise Feugas – [WEBTEAM2008] “Re: final draft”, 26 September 2007.

Françoise Feugas – francoise.feugas@orange.fr [WEBTEAM2008] “Re: final draft”, 24 September 2007.

Sofia Kjellén – <annasofiakjellen@gmail.com> [WEBTEAM2008] “Re: final draft”, 24 September 2007.

Mayo Fuster Morell – Participant of Euromovements. “Reflections on the ESF Online Tools”, EPA Stockholm, 2007.

Michelle Murrain – "Gender, Race and Open Source”. Available at: http://www.zenofnptech.org/2007/06 [Accessed August 8, 2007].

PGA 2007 – Media lab at ESF in Paris. Available at: http://www.nadir.org/nadir/initiativ/agp/ [Accessed 31 August 2007]

Prabir Purkayastha, All India Peoples Science Network and WSF India. WSF Memory Seminar: WSF 2004 Mumbai Experience. Available at: http://www.wsfindia.org

[Accessed 31 August 2007]

Veronique Rioufol (with the collaboration of Nicolas Haeringer and Françoise Feugas). – Practical Proceedings for Documenting the ESF, 2003.

Hilary Wainwright – (2004) "The ESF comes to London." Available at: http://www.tni-archives.org/detail_page.phtml?page=archives_wainwright_london [Accessed 14 July 2006].

Wsf2008.net Info 2 Global Day Jan 26 – WSF 2008 – Reporting process. Available at the Berlin EPA, February 2008.

Zalea TV – Communiqué de Zalea TV sur le média center de Forum Social Européen, 2003. Available at: http://archives.lists.indymedia.org/italy-list [Accessed 21 August 2007].

Registration form of activities – ESF 2008 http://www.esf2008.org

WSF – International Council. Abuja 31/03 – 3/04 2008. Report communication commission.

Lisbon, March – April 2007

Document from the EPA meeting in Lisbon (March 30 and 31 April 1 2007). Notes from Alessandra Micozzi, Leo Gabriel, Fabrice Collignon, Tasos Koronakis, Natasa Theodorakopoulo, Richard Jenkis, Mirek Prokes and Mariangela Casalucci.

Stockholm, September 2007

EPA Report Stockholm 15-16 September 2007.

Christoph Haug – "Decision-making at the European Preparatory Assemblies." Presented at the EPA in Stockholm, 15 September 2007.

Report from the website's working group, presented as a proposal at the Stockholm EPA and approved by the final assembly, 15-17 September 2007.

Memoria Viva Project: "Sharing our wealth: The memory bank of the ESFs. Preserving, indexing, accessing, valorizing all forms of memory." Document presented at the Stockholm EPA, September 2007.

Istanbul, December 2007

Report from Open e-library team.

Notes from the discussion at the EPA after the openesf.net presentation.

Notes on the intervention of a French activist at the EPA, 13 December 2007.

Berlin, February 2008

Flyer: “Alter surfing...”. Available at the Berlin EPA, February 2008. Responsible: Pierre George.

Flyer: openesf.net. Available at the Berlin EPA, February 2008.

Guidelines: Moderation of the openesf.net content. Approved at the EPA Berlin, 22, 23 and 24 February 2008.

Kiev, June 2008

Document “Web team budget and proposal of permanent funding.” Available at the Kiev EPA, June 2008.

Kiev EPA agenda 5 - 8 June 2008, Kiev, Trade Union House (Independence Square).

NOC Report on schedule of activities.

Flyer: “Spreading openesf.net: Invitation to prepare Malmo activities in http://www.openesf.net.” Available at the Kiev EPA, June 2008.

Mayo Fuster Morell – Report on the openesf.net use and community formation, June 2008.

Mayo Fuster Morell – Report on the openesf.net: “Participation behavior and interaction: Cooperation emerged”, June 2008.

Organizational principles of the US Social Forum 2010 Information and Communications Technology (ICT) Working Group. Available at http://ict.ussf2010.org/wiki/technology_principles

Other sources of empirical material consulted

ForumPedia. – http://www.euromovements.info/yearbook

ForumPedia. – Questionnaire on the collective evaluation on the Athens ESF: Concrete questions “Evaluation of the Workspace website” and “How ESF could be improved.”

Memo Culture. – Video-interviews on memory, 2006.

Mayo Fuster Morell - Member of Memory Project and Euromovements. Interview conducted by Lorenzo Mosca. Florence, 2007.

Other material collected on assembly model

Chris Carlsson – Critical Mass. Informal interview. San Francisco, December 2008.

Michael Eisenscher – National Coordinator of U.S.Labor Against the War. Interview. San Francisco, August 2008.

David Solnit – Organizers Seattle. Informal interview. San Francisco, October 2008.

Mika Matsuzaki – Founder of Riseup. Informal Interview. New York, October 2009.

Allen Gunner – aspiriationtech.org. Informal interview. San Francisco, September 2008.

Jesse Kirdahy-Scalia – From http://www.openmediaboston.org. Interview. Boston, November 2009.

DVD: “Debate on techno-political tools.” Infoespai. Barcelona, 2006.

Notes on Barcelona Seminar. Networked Politics, 2006.

Participative observation – 2008 Nonprofit Software Development Summit. Oakland, 17-19 November, 2008.

II. Foundation model: Wikipedia – Main data collection from July 2008 to August 2009

Wikipedia

Online Ethnography

Regular navigation at Wikipedia English (and occasionally Wikipedia Spanish and Italian) and Foundation e-lists from April 2008 to April 2010. Foundation _l e-mail exchange monitoring from 01 October 2008 to 17 July 2009.

Participation Observation

Wikimedia Italy annual meeting. Rome, September 2007.

Meet up. Palo Alto, 8 November 2008.

Ten Days of volunteering at Wikimedia Foundation, 10-20 December 2008.

Wikimania. Buenos Aires, August 2009.

Wikimedia Italy annual meeting. Rome, September 2009.

Meet up. Boston, October 2009.

Interviews

Board members

Jimmy Wales – Wikipedia Founder. San Francisco, 19 December 2008.

Michael Snow – Board head. San Francisco, 19 December 2008.

Samuel Klein – Wikimedia Foundation Board. Wikimania. Buenos Aires, 29 August 2009.

Foundation Members

Erik Muller – Deputy Director. Interview. San Francisco, 15 December 2008.

Jay Walsh – Head of Communications. Interview. San Francisco, 10 November 2008.

Cary Bass – Volunteer Coordinator. Interview. San Francisco, 24 November 2008.

Frank Schulenburg – Head of Public Outreach. Interview. San Francisco, 15 December 2008.

Mike Godwin – General Counsel and Legal Coordinator. Interview. San Francisco, 15 December 2008.

Rand Montoya – Head of Community Giving. Interview. San Francisco, 17 December 2008.

Kul Wadhwa – Head of Business Development. Interview. San Francisco, 16 December 2008.

Rebecca Handler – Head of Major Gifts. Interview. San Francisco, 17 December 2008.

Tomasz Finc – Software Developer. Interview. San Francisco, 20 November 2008.

Ariel Glenn – Software Developer. Interview. San Francisco, 20 November 2008.

Michale Dale – Software Developer. Interview. San Francisco, 15 December 2008.

Eugene Eric Kim – Blue Oxen Associates and Strategic Planning Wikimedia. 28 Interview. Wikimania. Buenos Aires, August 2009.

Wikimedia Projects Administrators or/and active participants

Betsy Megas – Wikidictionary project. Interview. Palo Alto, 8 November 2008.

Phoebe Ayers – Wikipedista. Author of *How Wikipedia works?*. Interview. San Francisco, 14 November 2008.

Jon Davis - Wikipedia adminostrator. Interview. San Francisco Bay Area, 10 November, 2009.

Faysan Fertakh – Wikimedia Morocco. Interview on clusters of administrators. Wikimania. Buenos Aires, 25 August 2009.

Kim Bruring – Dutch administrator from Leiden. Interview. Wikimania. Buenos Aires, 28 August 2009.

Henna – Informal interview. Wikimania. Buenos Aires, 28 August 2009.

Kragen Javier Sitaker – Informal Interview. Wikimania. Buenos Aires, 27 August 2009.

Andrew Lih – Author of *Wikipedia Revolution*. Interview at Wikimania 2009. 28 Buenos Aires, 28 August 2009.

Gerard M. and Siebrand. Dutch Wikipedists. Language Commission Wikimedia Foundation. Interview. Wikimania. Buenos Aires, 27 August 2009.

Wikimedia Chapters

Daniel Finol – Venezuelan Wikipedist. Chapters Commission Wikimedia Foundation. Wikimania. Buenos Aires, 29 August 2009 (Spanish).

Patricio Llorente – Wikimedia Argentina President. Wikimania. Interview. Buenos Aires, 28 August 2009 and informal interview. San Francisco, December 2009 (Spanish).

Carlos Barcenilla – Wikimedia Argentiva. Informal interview. San Francisco. December 2009 and Buenos Aires, 29 August 2009 (Spanish).

Thomas De Souza Buckup – Brazilian Chapter. Informal interview. Wikimania. Buenos Aires, 28 August 2009.

Einar Spetz – Sweden chapter and part of a wiki party. Interview. Wikimania. Buenos Aires, 28 August 2009.

Ilario Salvatore Valdelli – Board of Wikimedia Suiza. Informal Interview. Wikimesia Italia Assembly. 19 September 2009.

Frieda Brioschi – Board of Wikimedia Italia. Informal interview. Wikimesia Italia Assembly, 19 September 2009.

Leonhard Dobusch – Informal interview on Wikipedia internationalization. Berlin, 13 September 2009.

Relevant documentation consulted

Phoebe Ayers, Charles Matthews, and Ben Yates. *How Wikipedia Works.* Available at: http://howwikipediaworks.com/

Other material collected on Foundation model

Interviews of free software and open source cases

Bernardo Innocenti – SugarLabs and Free Software Foundation. Interview. Boston, 20 October 2009.

Mako Benjamin Hill – Protest.net, Indymedia, Debian, Ubuntu and Wikimedia Foundation. Interview. Boston, 25 October 2009.

Documents

Franklin Street Declaration.

Participative observation

Nonprofit Boot Camp. Craigslist Foundation. San Francisco Bay Area, 18 October 2008.

III. Enterprise model: Wikihow – Main data collection from July 2009 to January 2010

Wikihow

Online ethnography

Wikihow wiki regular navigation from July 2009 to January 2010. Monitoring message exchange in the forums during December 2010.

Interviews

Jack Herrick – Founder of WikiHow. Interview. San Francisco Bay Area, 4 December 2008.
Nicole Wilson – Administrator of Wikihow. Interview. Buenos Aires, 28 August 2009.
Betsy Megas (Dvortygirl) – Administrator of Wikihow. Interview. Palo Alto, November 8 2008 and Buenos Aires, 28 August 2009.
Jack Herrick – Wikimedia video presentation on Wikihow. Buenos Aires, 28 August 2009.

Other material collected on enterprise model

Povo

Hasty Granbery – From Povo.com. Interview. Boston, 21 October 2009.
Virtual ethnography (navigation). Povo, October 2009.

Wikianswers

Yishai Goldstein (Israel) – Technician of Wikianswers.com/Answers.com. Informal interview. Buenos Aires, 26 August 2009.

Virtual ethnography (navigation) Wikianswers. December 2009.

Wikitravel

Evan Prodromou – E-mail exchanges and analyses blog. December 2009.

Evans Podromou – Blog post: Open letter to Wikia. http://evan.prodromou.name/Open_letter_to_Wikia

Virtual ethnography (navigation) Wikitravel. December 2009.

Wikia

Jimmy Wales – Founder Wikia. Interview. San Francisco, 19 December 2008.

Angela Beesley Starling. – Informal interview. San Francisco, 8 November 2008.

Virtual ethnography (navigation) Wikia. December 2009.

IV. Corporation model: Flickr – Main data collection from July 2009 to January 2010

Flickr

Online ethnography

Flickr navigation from July 2009 to January 2010 (random navigation and use of Flickr applications, interaction with other users, and observation of groups). Reviewing the news from the Flickr team blog from December 2009 to January 2010.

Interviews

Micah Alpern – Former design leader for Yahoo! Answers. Informal interview. Wikimania. Buenos Aires, 28 August 2009.

Micah Alpern – Wikimedia video presentation on Flickr. Buenos Aires, 28 August 2009.

Evans Rabble – Protest.net, Indymedia and Flickr. Interview. Buenos Aires, 28 August 2009.

Other materials

Intervention from Flickr and Yahoo! community managers at Online Community Report Unconference 2009. Available at: http://www.onlinecommunityreport.com/2009/01/online-community-unconference-east-2009/

Other material collected on Corporation model

Other for-profit cases

Amazon: Phone interview with Andrew Weigend, 3 November 2008.

Online Community Report:
Bill Johnson – Online Community Report. Interview. San Francisco, 9 December 2008.
Online Community Report Unconference documentation.

V. Background understanding: Material on the Free Culture Movement and consultation with local experts

Interview with experts

Yochai Benkler – Expert common-based peer production. Informal interview. Madrid, 29 June 2010.

Donatella della Porta – Expert social movement research. Interview on Social movements versus Online creation communities. Florence, 11 March 2008.

Dorothy Kidd – Expert social movements. Interview. San Francisco, 17 October 2008.

Howard Rheingold – Expert virtual communities. Interview. Mill Valley, San Francisco Bay Area, 11 November 2008.

Fred Turner – Expert cyberculture. Interview. Palo Alto, 18 November 2008.

Jerry Feldman – Informal interview. Berkeley, August 2008.

Micah L. Sifry – Personal Democracy Forum. Interview. Oporto, 25 July 2009.

David Silver – Expert online communities. Interview. San Francisco, 29 October 2008.

Steve Weber – Expert FLOSS. Informal interview. September 2008.

Material on the Free Culture Movement

Interviews

Ben Moskowitz – Students for Free Culture. Interview. Berkeley, 16 December 2008.

David Harris – Institute for the Future. Informal interview. San Francisco, 7 December 2008.

Elizabeth Stark – Students for free culture. Interview. Belem do Para, Brazil, 1 February 2009.

James Jacob – Librarian For Free Culture Stanford. Informal interview. San Francisco, 15 December 2008.

Nick Reville – Participative Culture Foundation. Informal Interview. Oporto, 26 July 2009.

Noel Hidalgo – Director of Technology Innovation for the New York Senate. New York, 18 October 2009.

Rikard Stallman – Free software foundation. Interview. Rome, 12 Juny 2007.

Pablo Ortellado – Brazilian activist and academic on Free culture issues. Belem do Para, Brazil, 28 January 2009.

Participative observation

Participants at the Italian Hackmeetings. Hackmeeting Parma, September 2006 and Hackmeeting Pisa, September 2007.

Caos Computer. Berlin, December 2007.

Students for Free Culture Conference. Berkeley, 10-13 October 2008.

Wikimania. Buenos Aires, 26-28 August 2009.

First International Forum on Free Culture and Access to Knowledge. Barcelona, 29 October to 1 November 2009.

Personal Democracy Forum. Barcelona, 20-21 November 2009.

Documents

Epidemia (2009). *Free culture is not a commodity*. (Paper distributed at the World Social Forum).

Wheeler Declaration approved at Students For Free Culture Berkeley Conference 2008.

Mass campaign groups: Organizing individuals into mass membership e-groups

Ilyse Hogue – Director of Political Advocacy and Communications, MoveOn.org. Interview. Barcelona, 20 November 2009.

Paul Hilder – Campaign Director of Avaaz.org. Interview. Barcelona, 20 November 2009.

C. Discussion groups

Working group – Techno-political Tools. Debate on the Open Source as Political Metaphor. Networked Politics Project. Barcelona, October 2006. Available at: http://www.networked-politics.info

Seminar on web communities. Networked Politics Project. Berlin, June 2007.

Focus group – When does new media and political activism match/converge?. 2008 Nonprofit Software Development Summit. Oakland, 17-19 November 2008.

Discussion with experts and active participants – "Governance of platform of participation: Social forums and Web communities similarities" and "When does new media and political activism match/converge?" Seminar Networked Politics and Technology. School of Information, UC Berkeley, 6-7 December 2008.

Coordination organization seminar: Networked Politics and Technology. School of Information, UC Berkeley, 5, 6 and 7 December 2008.

Presentation and moderation panel "Organizational logic and political implications of free culture" First International Forum on Free Culture and Access to Knowledge. Barcelona, 29 October to 1 November 2009. Available at: http://www.fcforum.net

Organizational First International Forum on Free Culture and Access to Knowledge. Barcelona, 29 October to 1 November 2009. Available at: http://www.fcforum.net

Participating in the free culture research workshop. Berkman Center of Internet and Society. Boston, 23 October 2009.

Annex III. Codebook participation analysis openesf.net

This annex documents the data collection of the participation and interaction at openesf.net.

This annex is comprised of two parts. The first part lists and explains the details of the information collected from the participants' profile pages and from the project profile pages. The second part lists the indicators used for each analytical dimension.

Items collected and collecting specifications

Information collected from participants profile	Coding	Observations
Users nickname and name		
Type of profile	0 – Individual 1 – Organization	
Location		When the location of the participants was not specified at the location camp, it was extracted from the other camps such as About.
Gender	0 – Men1 – Women Missing data: 6 – Not recognizable by the name 66 – Not a person 666 – Not understood	The gender was interpreted through the name and/or photo of the participants. The large majority of participants tended to use their real name to register, so it was quite easy to identify the participants' gender. However, it was difficult to identify the gender of some languages other than English such as French, Italian, German or Castilian. In some cases it was necessary to consult other people.
Picture	0 – No 1 – Yes 666 – Missing data	Whether the participant provided a picture
Location camp	0 – No 1 – Yes	Whether the participant had attended the location camp.
Organizational website	0 – No 1 – One website 2 – Several websites	Whether the participant had provided one or more organizational websites
Personal website	0 – No	

	1 – Personal website non-commercial 2 – Personal website commercial	
About	0 – No 1 – Yes	Whether the participant had participated in the about camp.
Interest	0 – No 1 – Yes	Whether the participant participated in the interest camp.
Contact	0 – No 1 – Yes	Whether the participant had provided contact data (not including a website provided at the website camp). Any camp requires users to provide contact information such as e-mail, Skype, phone and postal address in their profile when they register. Therefore, it might be an incentive for the participant to provide contact data.
Joining projects indicator		Number of projects joined by the participant.
Persistence indicator	All the editing is done in the same day 0 – Yes 1 – No Date of registration Date of last login	
Content generation indicator	Modify projects: 0 – No 1 – One 2 –3, etc. Editing: 0 – Not a member; 1 – Member; 2 – Administrator; Creator – 3	
Project generation indicator	Creator of project: from 0 to 9 Which project did the participant generate	
Minimalistic profile	0 – Yes 1 – Almost, provide 1 extra piece of information 2 – No, provide more than 1 extra piece of information	

The users also had the option of using a wiki page associated with them. Data was not collected on the use of that page because very few users took advantage of this option (approximately 6).

Information collected from from project profiles	**Coding**	
Name of the project		
Number of members		
Number of administrators		
Thematic	1 - Agriculture and food 2 - Animal rights 3 - Art, culture and entertainment 4 - Common goods 5 - Communication technologies 6 - Community and local development 7 - Cross thematic movements networking 9 - Cultural and linguistic diversity 10 - Culture 11 - Democracy and politics 12 - Eastern Europe 13 - Ecology and sustainability 14 - Economy (ethical finance) 15 - Education 16 - Europe 17 - European Constitution 18 - European dimension of the mobilization 19 - ESF 20 - Exclusion and poverty 21 - Global governance, international institutions 22 - Global movement 23 - Health 24 - Human and civic right 25 - International solidarity and cooperation 26 - Labour, precarity and unemployment (workers' rights) 27 - Media and publications 28 - Migration and antiracism 29 - Religion and spirituality 30 - Research and methodology (alternative knowledge) 31 - Social forums 33 - Social movement 34 - Territory 35 - War, conflict resolution and peace (non-violence) 36 - WSF 37 - Youth 38- Gender, sexuality, feminism X - Missing data	

Subject of the project	1 – EPA network 2 – EPA working group 3 - NOC working group 4 - ESF activity 5 - National delegation 7 – Local project 8 – Unspecified project 9 – Information resource	It refers to the type of project subject. Information resource (refers to a project whose goal is basically the production and sharing of a set of information. Thus, the existence of such a "subject" that provides this set of information becomes secondary and vague. In addition, this "subject" does not have an offline existence.
Wiki Pages	Number of edited pages	Number of edited pages. This data was extracted from the contents section of the project. When the default page was not changed, it was considered a 0 page.
Wiki Editors	Number of recent editors	
E-lists	Number of e-lists used	This data was extracted from the contents section of the project. When the default e-list was not used or in cases where the only message sent to the e-list was a test message, it was considered a 0 e-list.
E-lists individuals	Number of people intervening	
Attachment Numbers	Number of attachments	
Attachment Individuals	Number of people who included an attachment	
Type of use	0 – *Not started to be used* 1 – *Link-oriented:* A project that basically provides a link to another website 2 – *Group presentation:* Generally one wiki page consists of a presentation of a project. The contents are presented in an "expositive"-oriented form; more to get to know the group than to use the space to engage in a more collaborative development. 3 – *E-list-oriented:* When the project is destined only to use e-lists 4 – Wardrobe: When the project is only used to archive documents 5 – *Working group – work in progress*	This typology considers two aspects: The orientation of the contents (i.e., expositive versus work in progress) and the type of participation (whether the contents have been generated by more than one person). *Working group – work in progress is* a project that is designed as a working space and whose contents invite further development and collective engagement. It generally engages more than one person to edit the content. However, sometimes all of the content is edited by only one person because this person has assumed the role of entering data online, even though the

	6 – *Blog:* Generally this space is developed by only one person and its contents are a sequence of the latest news and opinions 7 – *Knowledge node:* The goal of this project is to produce a knowledge resource; it is not a support resource for other goals such as organizing a seminar or coordinating the tasks of a working group	content was the result of a collaborative work between other members. On other occasions, it is a work in progress involving only one person. It normally involves a group presentation, working document and e-list communication.

Indicators per dimension

Identity: Individual versus organization

Indicators: Type of profile (Individual or organization) and type of website provided (personal or commercial website)

Commercial versus non-commercial:

Indicator: Type of website provided (commercial or non-commercial)

Agenda of the community

Indicator: Type of project and theme

Digital Divide: Distribution per place, theme and gender

Indicator: Location, gender and theme

Event versus process-oriented

Indicator: Type of project subject

Size of the community

Indicator: Total number of registered accounts

Annex IV. Review of the web analysis of non-conventional political actors in light of the literature on the quality of democracy

The debate on the potential effect of the Internet on politics and democracy has raised much interest and created expectations, recognizing both great potential and a source of risk. Moreover, the effects of the Internet on politics and democracy has also seen renewed interest in measuring democracy with the emergence of a sub-field of empirical research whose goal is to analyze the democratic quality of the websites of political actors.

Therefore empirical analyses on the use of the Internet by political actors have only recently been carried out. First studies on the Internet and politics have mainly concentrated on well-established and traditional actors such as parliaments and political parties and their communication strategies during electoral campaigns (Norris, 2002; Römmele, 2003; Trechsel, Kies,, Mendez, & Schmitter, 2003). As Bennett (2003) observes: “much of the attention to the Internet has been directed at the places where the least significant change is likely to occur: the realm of conventional politics”. Nevertheless, several cases of empirical research on the relationship between the Internet and interest groups, NGOs and social movements can be cited (Vedel, 2003). Furthermore, some web analyses of political actors mainly based online and with no offline pre-existence can be listed (Navarria, 2007; Fuster Morell, 2008).

As Vedres, Bruszt and and Stark comment: “we find new types of actors making new kinds of representational claims outside of electoral politics within a new representational medium” (2005a; 2005b). This annex will focus on the empirical web analysis of non-conventional political actors.

As previously mentioned, web analyses have already been applied to several types of political actors. However, a problem has emerged. The lack of referential standards for web analysis limits the possible comparison between these pieces of research and the results obtained here. In this regard, this annex aims to contribute to compare web analyses of several types of political actors in order to develop an analytical methodology (mainly concerning dimensions, indicators and forms of measurement) to facilitate the comparison of the data.

Several approaches can be identified in the research on the use of the Internet by social movements and NGOs. The element distinguishing these approaches is mainly based on the different applications that are analyzed (such as, websites, mailing-lists/forums, search-engines, etc.). Most of the empirical research center on the analysis of one of the online tools used by the actor, and do not adopt an integral communication view of all the online tools used by each particular actor.

Concerning the **analysis of websites**, one approach consists in analyzing the web hyperlink structures of social movement networks. This is based on a social network reticular approach (Diani, 2002), but other than hyperlinks this approach does not consider any other characteristics of the web. The goal of this approach is to extract form and the structural positions and influence of each organization in the network. Examining hyperlinks in order to identify the visibility of an organization through the role of search engines and communication networks on the Internet is another variant of this first approach (Ruud Koopmans & Ann Zimmermann, 2003).

Another of the approaches in empirical research on social movement uses of the Internet is the statistical analysis of the characteristics and democratic quality of social movement organizations' websites (della Porta & Mosca, 2006; Sudulich, 2006).

This annex will focus on this approach.

The web analyses in empirical research on non-conventional political actors are of limited number. This review includes the first analysis developed by van Aelst and Walgrave on global movement organizations' websites (2001), Vedres, Bruszt and Stark's analysis of European NGOs (2005a; 2005b), della Porta and Mosca's (2006) and Sudulich's (2006) work on global movements' websites (2006), Navarria's analysis of blogs on civic engagement (BeppeGrillo) (2007) and Fuster Morell's analysis of online creation communities (this dissertation). Some other research related to web analysis will also be mentioned (Boudourides, Botetzagias, & Kalamaras, 2003).

I. Theoretical review

One research design aspect common to these web analyses is that authors do not seek to "try to deduce social effects from the properties of technologies" (Vedres, Bruszt & Stark, 2005a; 2005b); that is, the technology is not situated as an "independent variable", but as a "**dependent variable**". This represents a shift in the research question: instead of asking why political actors fail to exploit the democratizing potential of the Internet, the question of which characteristics explain the current use that the actors make of the Internet is addressed. The political actors' characteristics considered are related to the environment, frames of political opportunity, communication strategies and conceptions of democracy. In this view, social actors do not relate to "the Internet as a monolithic unit guided by the technology"; on the contrary, political actors are "guided" to wards choosing between several technologies depending on their political agency (Vedres, Bruszt & Stark, 2005a; 2005b). In synthesis, political actors adapt technology to their styles and organizational strategies (Vedres, Bruzts & Stark, 2005a; 2005b).

Several **analytical functions of the dimensions** employed can be distinguished. The dimensions are used:

A) As ***descriptive categories*** (and dependent variables)

B) As ***comparative categories***. Categories used to compare several websites.

C) As ***evaluating-qualifying categories***.

In the evaluating-qualifying category, two assumptions can be identified. First, there is the presumption that "*more is always better*". That is, independently of the communication goal of the website, the presence of many features rather than fewer is considered better. This is because the presence of many features is considered as a sign of quality. Second, the quality associated with the features is a democratic quality.

While there is mutual influence among these pieces of research, there is no common set of dimensions and indicators for all the empirical analyses. Instead, in each case, the researchers adapt the dimensions and their indicators to their analytical interest. Moreover, the unconventional political actors and the goals of their websites are heterogeneous in comparison to the websites of political parties or parliament, and this also contributes to the variety of dimensions considered in the analysis of non-conventional political actors.

Vedres, Bruzts and Stark adopt a unique approach (2005a; 2005b). Instead of pre-defining their analytical dimensions and associating a democratic value to them; they list a set of features of the websites (i.e., e-mail account, mission statement, etc.), and then analyze the correlations between these, extracting clusters which represent the diverse styles of websites.

A brief presentation of the set of dimensions used in these studies runs as follows:

i) Information provision generally refers to the provision of information related to the political actor on political formation.

ii) Offline / online mobilization: Whether an organization exploits the new chances offered by the Internet to activate users and to stimulate them to intervene in the democratic process with various forms of actions both offline and online.

iii) Interactivity, or the openness to participation dimension, is generally related to the provision of interactive applications that allow participation, the protocols that guide those applications and the presence of information that facilitates participation. It is linked to identity building.

iv) Usability generally refers to the presentation of information in an easy and navigable manner.

v) Transparency and accountability generally refers to the provision of information on the community itself (i.e., organizational structure, legal statutes, identified roles, etc.) and on its finances. Information referring to the website itself is also offered to general users.
vi) Intervention in the digital divide *(*Accessibility) refers to the attributes of the website in order to accommodate different user populations and guarantee universal accessibility. The attributes of the website are designed in order to reduce barriers for people with physical disabilities.
vii) Knowledge policy refers to whether the authorship, data policy and conditions of use (licence) are published.
viii) Openness infrastructure provision refers to the possibility for participants in platforms to get involved in the provision body.

Concerning the distribution of the dimensions in the studies (See Table 1), the most frequently used dimensions are those of ***information provision*** and ***interactivity***. These two dimensions are also commonly used in the web analysis of political parties and other types of actors.

A difference in the field of social movement web analysis is the ***mobilization*** dimension (this is not used in the web anaylsis of conventional actors). However, the mobilization dimension is not used in all the studies.

Other dimensions included are ***knowledge policy transparency and accountability, openness infrastructure provision*** and ***intervention in the digital divide*** (accessibility). In web analyses of unconventional political actors, ***usability*** is not specified as a dimension (as it is used in some cases for conventional political actors); however *usability* forms part of the dimension of provision of information.

Navarria is the only author to adopt a cross-temporal approach, looking at the growth of commitment of the public visiting a blog.

Most of the researches designs seek to analyze the design of the space and not the actual interaction taking place in the space (della Porta & Mosca, 2006; Sudulich 2006; van Aelst & Walgrave, 2001; Vedres, Bruszt & Stark, 2005a; 2005b). These research designs look at the democratic quality of the set of features provided by the website, but do not look at the actual use of those features. Navarria, however, measures actual participation in the interactive mechanisms as part of the interactive dimension (2007). Fuster Morell also measures actual participation, but separates the analysis of the provision of features of democratic quality and the actual use and interaction on the platform (this dissertation).

On the one hand, not measuring the actual use of the website could spell a limitation because this risks ignoring whether or not any actual interaction is taking place on a website or not – a factor with clear implications in terms of the quality of democracy.

.

Table I. Dimensions in each study

	P. Van Aelst P. & Walgrave	*Vedres, Bruszt & Stark*	*della Porta and Mosca*	*Sudulich*	*Navarria*	*Fuster Morell*
Information Provision	X		X	X	X	X
Mobilization	X		X			
Interactivity	X		X	X	X	X
Usability			X			X
Transparency			X			X
Accessibility			X			X
Provision						X
Knowledge						X

Legend: X= Dimension considered by the author

Lastly, in most of this empirical research (four of the five cases), analyses are centered on a statistical analysis of website features, but accompanied by a hyperlink analysis in order to extract the network effect in the sample or visibility on the net.

Web analysis is inspired by and shares many questions with the research tradition of the quality of democracy in society. Lessons on the **problems of conceptualization** of the quality of democracy can also be applied to web analysis. However, specific problems concerning the conceptualization of web analysis can be also detected.

Several authors have argued the problems of conceptualization of the quality of democracy, such as (i) the failure to develop an adequate definition of democracy (Bollen, 1990; Bollen & Paxton, 2000); (ii) correct identification of attributes or dimensions (Berg-Schlosser, 2004; Munck & Verkuilen, 2002); (iii) and a clear definition of quality (Diamond & Morlino, 2004; Morlino, 2004). These three sources of problems also apply to the web analysis of political actors; (iv) Moreover, a fourth source of conceptual problems could be added for web analysis: the problem of the failure to adequately define the object of the analysis. This annex will now present this fourth source of potential conceptual problems, and then consider the other three sources of problems.

If the ***object* of analysis** of the quality of democracy in society is fundamentally the national state and its concrete boundaries (Berg-Schlosser, 2004; Bollen, 1990; Bollen & Paxton, 2000; Diamond & Morlino, 2004; Morlino, 2004; Munck & Verkuilen, 2002) the *object* of analysis for web analysis is, in principle, the websites of concrete political actors and the interaction established through such online platforms. However, in web analysis, it is confusing whether or not democratic effect applies to:

Democratic internal organization: the website contributes or not to the internal democracy of the political actor. For example by providing information on decisions to be taken in an assembly.

Democratic web settings: the democratization of the interaction established through the website; that is democratic quality according to the settings of the website, such as the distribution of roles and rights for those taking part in interaction.

Democratic society: the website and the political actor contribute or not to the democratization of society in relation to a particular country or other political context of reference. This factor is evaluated according to the reinforcement of a particular ideal of democracy.

For example, the provision of information by a website is sometimes interpreted as a sign of the political actor's internal democracy; in other cases information provision is interpreted as a source of the organization's transparency in relation to the users of the website, and, last, on some occasions the presence of features related to information provision are interpreted as contributing to the democratization of society, for example because they contribute to informing voters or provide alternative sources of information.

In this regard, it is convenient to specify which of these aspects are referred to when interpreting websites.

For the case of the measurement of the quality of democracy of society, Bollen underlined the problems associated with the failure to develop an adequate **definition of democracy**[297], such as confusion between the concept of democracy with other concepts, and treating democracy as a binary concept (rather than a binary *measure*) instead of a continuous concept (1990).

297 Studies either fail to provide a definition or do not draw a sharp line separating their theoretical from their operational definitions.

In this regard, it is not clear to me whether web analysis researchers fail in providing a clear definition of democratic quality, adopt a systemic approach, or, more than dimensions of democratic quality, they speak of different "qualities" of democracy, and assess the level of development of each individually. In any case, in web analysis it would certainly be useful to specify if a systemic approach to the dimensions is adopted, or if the dimensions are considered individually.

When possible, it may also be useful to provide a clear definition of democracy. And if several aspects are considered, as specified above, it might be convenient to provide a definition of a democratic organization, of democratic web settings, and of a democratic society, or at least to provide an idea of the principles that guide democratic quality.

Depending on which ideal of democracy we are thinking about, a feature on a website could be well-suited to enhancing democracy in different ways; but according to another conception of democracy, we may regard the same technological feature as hostile to it (Koopmans & Zimmermann, 2003).

There is another reason for making the actual ideal of democracy guiding the research explicit. It may also be advisable to check whether the ideal of democracy used to evaluate a website matches the actor's ideal of democracy. Otherwise, there is the risk that, when assigning a democratic quality to a feature of a website (that is, interpreting its democratic sense), the meaning the researchers attribute will not coincide with the meaning of the actions from the actor's point of view.[298]

Munck and Verkuilen present the problem of the **identification of attributes** and the dangers of maximalism (no empirical instance and of little analytical use) and minimalism (all cases automatically instances), as well as problems related to the vertical organization of attributes by level of abstraction in the analysis of the quality of democracy in society (2002).

Concerning the dimensions used in the web analyses reviewed here, it would be useful to extend the argumentation on the reasons for analyzing the chosen dimensions, the argumentation on the democratic value of those dimensions, and especially the argumentation on why those dimensions have a democratic value and are relevant for analysis in a context of web interaction.

298 This may not be the case if the researcher is evaluating the action according to a democratic ideal, or if the goal is to extract the democratic ideal of the actor and to evaluate her /his action according to that ideal.

Moreover, as Diamond and Morlino claim, it would be important *"to identify some of the ways in which the different elements of democracy not only overlap, but also depend upon one another, forming a system in which improvement along one dimension (...) can have beneficial effects along others (...). At the same time, however, there can be trade-offs between the different dimensions of democratic quality, and it is impossible to maximize all of them at once"* (2004; p. 25).

In addition to democracy and its dimensions, a further step in evaluating "good" democracies requires a clear definition of "quality". In this regard, Diamond and Morlino add the problem of the failure to develop an adequate **definition of quality** (Diamond and Morlino, 2004; Morlino, 2004).

Diamond and Morlino introduce three different notions of quality, grounded in procedure, content and result (2004). A survey of the use of the term in the industrial and marketing literature suggests at least three different meanings:

1. Quality is defined by the established procedural aspects associated with each product; a 'quality' product is the result of an exact, controlled process carried out according to precise, recurring methods and timing; here, the emphasis is on the **procedure.**

2. Quality consists in the structural characteristics of a product, be it the design, materials or functioning of the good product, or other details that it features. Here, the emphasis is on the **content.**

3. The quality of a product or service is indirectly indicated by the satisfaction expressed by the customer, namely by their requesting again the same product or service, regardless of either how it is produced or what the actual contents are, or how the consumer goes about acquiring the product or service. According to such a meaning, the quality is simply based on **result"** (Morlino, 2004).

Concerning the dimensions used in web analyses of unconventional political actors (See table II), according to Diamond and Morlino's classifications of qualities, the dimensions of ***transparency, knowledge policy*** and ***information provision*** can be associated to the **procedure** quality; while ***usability*** and ***accessibility*** can be linked to **content**. The case is not so clearcut for *interactivity* and *mobilization*. On the one hand, *interactivity* understood as the provision of a mechanism for participation could be linked to **content** (Such as the cases of della Porta & Mosca, 2006; Sudulich, 2006; van Aelst & Walgrave, 2004), but where the

analysis of interactivity measures participation (as is the case of Navarria, 2007), it would be associated to **result**. The same could be said for the ***mobilization*** dimension, and **participation in the provision space**. However none of the authors actually measured mobilization resulting from web-based activity.

Table II.Type of quality and web analysis dimensions

	Procedure	*Content*	*Result*
Information Provision	x		
Mobilization		x	x (Actual mobilization resulting from the web)
Interactivity		x (Provision of interactive mechanism)	x (Actual use of the interactive mechanisms)
Usability		x	
Transparency	x		
Accessibility		x	
Knowledge	x		
Provision	x		

Besides the classification of qualities proposed by Diamond and Morlino (2004), it could be useful to classify the dimensions according to transversal matters, raw materials and goals (See table III):

ı) ***Raw materials***, the main "*ingredient of the dish*". This is the case of *information* and *interactivity*. The dimensions of *transparency* and *knowledge management* are particular cases of this type, since they refer to the provision of specific information.

ii) ***Transversal matters***: "qualities" that facilitate the use of and access to the raw materials. This would be the case of *knowledge management*, *usability* and *accessibility,* transversal elements that facilitate the website's functioning and increase the equality and non-discriminatory setting of the website.

iii) ***Goals***: informing and connecting could be classed as means - ingredients, but they could also be seen as intermediate goals. However, other final goals could form part of the agenda of the online infrastructure. That is, information and connecting would be an intermediate stage of an organizational process to achieve something else such as (offline and online) mobilization against corporations or knowledge-making through activities such as

building an archive of articles. However, in most empirical analyses the agency of the online website is not taken into consideration.

Table III.The nature of the different dimensions

	Transversal question	*Raw Material*	*Goal*
Information provision		x	Intermediate Goal
Mobilization			Final Goal
Interactivity		x	Intermediate Goal
Usability	x		
Transparency		x	
Accessibility	x		
Knowledge	x	x	

II. Measurement methods in web analysis

Following Carero's (2007) classification of the measurement method, diverse options are present in the literature on web analysis (in a broad sense not restricted to unconventional actors).

a) The **dichotomous** measurement is based on an analysis of the appearance of each of the indicators. It consists in applying a dichotomous choice, deciding on either the presence or absence of the indicator. This is the mechanism it its simplest application.

b) **Scores and evaluation**. This formula is based on the establishment of a scale used to measure the presence of each indicator. The gradation generally goes from 0 to 2, 3 or 4 points (with increases of a point or half point). It can be differentiated into two types:

b.a) The gradation can take into account the non-presence to the highest or most accentuated frequency of appearance of the indicator depending on the ***evaluation of the coder***. The scale used runs thus: 0 - not present, 1 - little presence, 2 - moderate presence, 3 - some presence, 4 - very present/adequate (De Landtsheer, Krasnoboka & Neuner, 2001; Dader & Diaz Ayuso, 2007). The use of a scale with scores based on the value judgments of a coder has been criticised for increasing uncertainty and subjectivity in empirical work which can reduce rigor.

b.b) Another option is the use of a pre-determined gradation based on ***modalities of presence*** (example for a website licence 0 - not present, 1 – present only with the name, 2 – present with the name and an explanation of the conditions). This mechanism usually includes evaluation systems for the different categories.

Bollen suggests that increasing the number of rating points is recommended (1990).

c) Measurement of the number of required **clicks**. This method measures the number of clicks necessary to accede to a certain indicator on the website. This mechanism can be complicated to carry out.

d) Measurement of an indicator's **position** in the website: according to its centrality versus its lateral position in the site.

The potential **measurement problems** here, according to Bollen (1990), are: i) invalid indicators; ii) ordinal/dichotomous measures; iii) failure to test reliability and validity; iv) subjective indicators. Concerning subjective measures, the information available for rating, the coder's processing of this information, and the method by which a coder's decisions are translated into a rating - could create error (Bollen & Paxton, 2000).

Bollen (1990) suggests the following **conventional standards of measurement** in order to avoid those problems: provide a theoretical definition of democracy, identify its major dimensions, measure each dimension with several indicators, explain how the indicators were created and how to replicate them, specify the relation between each dimension and the indicators, andreport estimates of reliability and validity

According to Munck and Verkuilen **measurement challenges** here are as follows (2002):

i) The selection of indicators (readability and validity). The authors recommend using multiple indicators and establishing cross-system equivalence for these indicators; using indicators that minimize measurement error and can be cross-checked through multiple sources.

ii) Selection of measurement level (reliability and validity). The authors recommend maximizing homogeneity within measurement classes with the minimum number of necessary distinctions.

iii) Replicability. The authors recommend recording and publicizing coding rules, coding process and disaggregating data.

Aggregation challenges are as follows (Munck & Verkuilen, 2002):

i) Selection of the level of aggregation (validity). The authors suggest balancing the goal of parsimony with concern for underlying dimensionality and differentiation.

ii) Selection of the aggregation rule (robustness of aggregate data and validity). The authors suggest ensuring correspondence between the theory of the relationship between attributes and the selected rule of aggregation.

iii) Replicability. The authors suggest recording and publicizing aggregation rules and aggregated data.

III. Reflections and questions concerning web analysis

In the following, some questions that it could be useful to address in the field are presented.

1) What defines web analysis?

Web analysis refers to the analysis of the democratic quality of political actors' websites. But how elastic is the use of the term *web analysis*? Does web analysis refer generally to other qualities of the websites, aside from democratic quality? Does it refer to other types of analysis or can it be defined as statistical analysis? Does it also consider other types of applications, such as e-lists? In this regard, it could be useful to provide a **referential definition of web analysis**.

2) What are the advantages and disadvantages of using this methodology? What is the evaluation of the web analysis methodology in terms, for example, of how time-consuming it is?

3) Is web analysis useful for all types of political actors or is it more suited to conventional actors than unconventional actors? Could the same analytical method be employed to research a political actor whose main mode of expression is offline as well as another whose main mode of expression is online?

In this regard, as some authors agree, in social movement organizations one of the main problems in conducting such studies derives from case selection, where the main risk lies in the danger of selection bias (Sudulich, 2006). As stated by Van Aelst and Walgrave, *"probably the trickiest part of this study was the criteria for selection of websites"* (2004, p. 105). In this regard, in social movement websites, there is no clear universe of cases and there is more diversity in terms of the goals of websites than is so for other actors.

The analysis of the websites may also vary according to whether interaction through the online infrastructure is the main goal (i.e., the case of an online community like Wikipedia) or whether it is a complementary sphere of interaction (i.e., the website of a social movement organization or political party with regular offline meetings).

4) Communication between equals?

Generally the dichotomy *"bottom–up"* and *"top-down"* is used in web analysis to define two models of communication strategy in political websites. However, the *bottom–up* and *top-down* categories have some limitations. On the one hand, some elements suggest that this emerging organizational form establishes a more organic relationship with the public space: actors do not participate in the public space to "communicate" with others, but instead "live" in the public space. The website may therefore be addressed not only as a communication strategy but also as an organizational strategy. On the other hand, the bottom-up and top-down categories are limited in terms of their capability to describe the actual relation established through the website; they assume that all hierarchies are equal, where it would be more accurate to differentiate the types of hierarchy that are established, for example, in political parties or social movement organizations. Finally, these categories do not offer a complete picture. Some online interaction is based on communication between equals (i.e., forums), where no hierarchy is present**.**

5) Networked Website Analysis?

The analysis of the use of the Internet by political actors has so far only considered applications generated by the actors themselves, analyzing, for example the websites set up by social movement organizations. However, the use of the Internet by political actors can be more diverse and include other forms. On the one hand, it can include the building of websites and other online channels; on the other, it can include, in some cases, hyperlinks to sections and pages set up by the political actor in external interactive platforms, such as: the use of Flickr for making photos of demonstrations available; YouTube for videos; or the full filling of Wikipedia entries. In this sense, to have a more holistic view of the website "as a network of websites" and also to incorporate hyperlinks to external interactive platforms into the analysis would help to complete the understanding of political actors' use of the interactive aspects of the Internet.

6) What does being in the field of web analysis mean?

In her book Virtual Ethnography, where she summarizes the growing dedication of anthropologists to researching the cyber-other, Christina Hine highlights two major issues within online methodology: innovation and anxiety (Hine, 2000).

The first issue refers to the fact that web analysis is in itself an innovation. However, Hine is also aware that this innovative aspect also represents a source of anxiety, as the task of innovation is to bring down old, reliable, and established modes of research, leaving a field of experimental settings and unproven methods. Anxiety in Internet research very often arises from the notion "that nothing can be taken for granted". This is because netiquette in general and the ethics of online research - as a new form of social interaction, both for researchers and the researched - seem to be primary issues in which anxieties play a role (Hine, 2005; Zurawski, 2006).

Another feeling that is regularly transmitted by researchers involved in Internet methods – mentioned on most of the front pages of websites related to Internet research - is the enthusiasm that is involved in using them.

7) Human coding versus program coding?

Data collection can be carried out in two ways: through “human” identification or through a computer program. Human identification means that a person checks if an indicator is present or not in the website; program identification uses a program designed to automatically detect if all the set of indicators are present or not, and to extract an automatic value for the website.

At present, various applications covering some aspects of web analysis are already available. This is the case for the *Test of Web Accessibility* by the World Wide Web Consortium[299], which allows the researcher to automatically evaluate website accessibility according to a set of indicators.

A complete program for evaluating the democratic qualities of a website could be a very useful research tool. A web analysis program could contribute to the significant reduction of the time-consuming process of data collection and facilitate website analysis for the actors themselves.

IV. Conclusions

The web analysis of unconventional political actors is limited and is inspired by and follows the experience of web analysis research on conventional political actors. It shares some problems with research on the measurement of quality of democracy in society.

299 Test of Web Accessibility. Retrieved from http://www.tawdis.net

While there is a mutual influence between the web analyses of unconventional actors reported here, there is no common set of dimensions and indicators for all the empirical analyses. The most frequently used dimensions are those of ***information provision*** and ***interactivity.*** A different dimension used in social movement web analysis is the ***mobilization*** dimension (this is not used in web analyses of conventional actors). Other dimensions included are ***knowledge policy, participation in provision, transparency and accountability*** and ***intervention in the digital divide*** (accessibility). ***Usability*** is not specified as a dimension (as it sometimes is for conventional political actors); however *usability* is integrated as part of the dimension of provision of information.

Vedres, Bruzts and Stark (2005a; 2005b) adopt a particular approach where, instead of pre-defining analytical dimensions and assigning the a democratic value, they list a set of features of the websites and then analyze the correlation between these, extracting clusters which represent the diverse styles of websites.

In most of this empirical research, the analysis is center on a statistical analysis of website features, but is accompanied by a hyperlink analysis in order to extract the network effect in the sample or visibility on the net.

In most of the cases the research designs are based on an analysis of the design of the space and not the actual interaction taking place therein. These research designs look to the democratic quality of the set of features provided at the website, but do not look at the actual use of those features. This could be a source of limitation because this perspective risks ignoring whether there is actually any interaction taking place on the website or not.

Lessons on the problems of conceptualization of the quality of democracy of society can be applied to web analysis. However, specific problems on the conceptualization of web analysis can be also detected. Specifically, the sources of conceptual problems lie in the failure to develop an adequate definition of democracy, correctly identify dimensions and the clear definition of quality, which could also apply to the web analysis of political actor. Moreover, a fourth source of conceptual problems may be added for web analysis: the problem of the failure to provide an adequate definition of the *object* of the analysis.

In web analysis, the question of whether the democratic effect is applied to the democratization of the internal democracy of the political actor; the democratic web settings, that is the democratization of the interaction established through the website; or the role of the website and the political actor in the democratization of the society in relation to a particular country or other political context of reference is confused. In this regard, it would be useful to specify which of these aspects are referred to when interpreting websites' democratic effects.

Finally, web analysis is a new and innovative research field. Concerning the definition of the web analysis field and the methodology adopted, many questions and spaces for innovation remain open: *what defines web analysis? Is web analysis useful for all types of political actors or is it more suitable for conventional actors than unconventional ones? Could and would it be useful to develop web analyses of networks of websites? What does being in the field of web analysis mean? Would it be convenient to develop an automatic coding system?.*

VI. Bibliographic references and useful resources

The bibliographical references are distributed in categories: social movements and NGOs; political parties, parliaments and cities; quality of democracy; and other related literature.

Social Movements and NGOs

Boudourides, M., Botetzagias, I. & Kalamaras, D. (2003). Evaluating Web Sites of Online Activism. Contemporary Anti-War Mobilizations. Corfu, November, 6-7, 2003. Facititated by the author.

Del Giorgio, E., Freschi A. C. & Mosca, L. (2003). Grace codebook for website analysis. In paper. Facititated by the author.

della Porta, D. (2006b). *Democrazia e internet. Una introduzione* [Democracy and Internet. An introduction]. *Rassegna Italiana di Sociologia, 4*, 521-528.

della Porta, D., & Mosca, L. (2006). Report on WP2 – Searching the net. Project Democracy In Europe and the mobilization of society. Retrieved from http://demos.eui.eu

DEMOS Project. (2006). Codebook for the analysis of websites of social movement organizations. Retrieved from http:////demos.eui.eu/PDFfiles/Instruments/wp2codebook_final.pdf

Navarria, G., (2007). Reflections on beppegrillo.it: A successful attempt of innovation and active promotion of political participation through the web?. Paper prepared for the 4th ECPR General Conference, Pisa (Italy), 6-8 September, 2007. Section: "Emerging Patterns of Collective Action" Panel: “The use of ICTs for innovative forms of participation”.

Sudulich, M. L. (2006). ICT and SMO: something new?. Paper presented at the “Cortona Colloquium 2006 – Cultural Conflicts, Social Movements and New Rights: A European Challenge”, 20-22 October 2006, Cortona, Italy.

Van Aelst, P. & Walgrave, S. (2004). *New Media, new movements? The role of the Internet in shaping the anti globalization movement.* In Van De Donk, W., Loader, B., Rucht, D., & Nixon, P. *Cyberprotest: New Media, Citizens and Social Movements.* London: Routledge.

Vedres, B., Bruszt, L., & Stark, D. (2005a). Organizing technologies: Genre forms of online civic association In Eastern Europe. *The Annals of the American Academy of Political and Social Science 597*, 171-188. doi: 10.1177/0002716204270504

Vedres, B., Bruszt, L., & Stark, D. (2005b). Shaping the web of civic participation: Civil society websites in Eastern Europe*. The Journal of Public Policy*, *25*, 149-163.

Political Parties, Parliaments and Cities

Bowers-Brown. J. (2003). A marriage made in the cyberspace? Political marketing and UK party websites. In R. Gibson, P. Nixon, & S. Ward (Eds.). *Political Parties and the Internet*. (pp. 98-119). London: Routledge.

Campbell, A., Harrop, A., & Thompson, B. (1999). Towards the virtual Parliament. What computers can do for MPs. *Parliamentary Affairs, 52,* 388-403.

Cantijoch, M. & San Martin, J. (2007). La oferta participativa de las webs parlamentarias. Ponencia presentada en el VIII Congreso AECPA.

Casero, A. (2002). Medios de comunicación y partidos políticos en la sociedad de la información. En C. Almuiña, y E. Sotillos (Coord.). *Del Periódico a la Sociedad de la Información. Vol. III.* (pp. 387-393). Madrid: Sociedad Estatal España Nuevo Milenio.

Casero, A. (2007a). Los websites de los partidos políticos: nuevos instrumentos de la comunicación corporativa en el escenario online. *Razón y Palabra*, 55. Retrieved June 7, 2007 from http://www.razonypalabra.org.mx/anteriores/n55/acasero.html

Casero, A. (2007b). E-campaña 2007: Internet en las elecciones autonómicas valencianas. Ponencia presentada en el VIII Congreso de la AECPA, Valencia, 2007.

Coleman, S., Taylor, J., & Van de Donk, W. (Eds.) (1999). *Parliament in the Age of the Internet.* Oxford: Oxford University Press.

Cunha C., Martin I., Newell J., & Ramiro, L. (2003). Southern European parties and party systems, & the new ICTs. In R. Gibson, P. Nixon & S. Ward (Eds.). *Political Parties and the Internet.* (pp. 70-97). London: Routledge.

Dader, J. L. & Díaz Ayuso, I. (2007). Las webs de partidos españoles 2004-2005: Una investigación preliminar y de comparación europea, con una propuesta metodológica. Ponencia presentada en el I Congreso de Investigación en Comunicación Política – Ciclo Complutense, Madrid, 2007.

Davis, R. (1999). *The Web of Politics: the internet's impact on the American political system*. Oxford: University Press.

De Landtsheer, C., Krasnoboka, N. & Neuner, C. (2001a). La facilidad de utilización de los websites de partidos políticos. Estudio de algunos países de Europa del Este y Occidental (1999). *Cuadernos de Información y Comunicación (CIC), 6,* 107-140.

De Landtsheer, C., Krasnoboka, N. & Neuner, C. (2001b). User friendliness of political websites in Eastern and Western European countries. Paper prepared for the Conference of the International Communication Association in Washington May.

Gibson, R., Lusoli, W., & Stephen, W. (2002). Online Campaigning in the UK: The Public Respond?. Paper prepared for the Annual Meeting of the American Political Science Association, Boston.

Gibson, R., Margolis, M, Resnick, D. & Ward, S. (2003). Election Campaigning on the WWW in the USA and UK. A comparative analysis*. Party politics, 9, 1.*

Gibson R., Ward, S., Newell, J. L. (2000). New Parties, New Media: Italian Party Politics and the Internet. *South European Society and Politics, Vol.5, No.1, Summer,* 123-142.

Gibson, R., Nixon, P., & Ward, S. (Eds.) (2003) *Political Parties and the Internet. Net gain?*, Routledge, New-York and Londres.

Gibson, R., & Ward, S., (1998). U.K. Political Parties and the Internet: "Politics as usual" in the New Media?. *Harvard International Journal of Press/Politics 3(3):* 14-38.

Hill, K. & Hugues, J.E. (1998) *Cyberpolitics. Citizen activism in the age of the internet*. Lanham, MD: Rowman & Littlefield.

Lusoli, W. & Ward, S. (2005). Logging On or Switching Off? The Public and the Internet at the 2005 General Election. In S. Coleman (Ed.). *Spinning the Web: Online Campaigning during the 2005 General Election.* London: Hansard Society.

Marcos, M.C. & Rovira, C. (2006). Las webs parlamentarias: funciones y elementos de su interfaz en el acceso a la información. *Revista Española de Documentación Científica*, 29, 1: 11-33.

Margolis, M., Resnick, D. & Wolfe, J. (1999). Party Competition on the Internet in the United States and Britain. *Harvard International Journal of Press/Politics 4(4):* 24-47.

Newell, J. (2001). Italian Political Parties on the Web. *Harvard International Journal of Press/Politcs, 6(4),* 60-87.

Norris, P. (2003). Preaching to the converted? Pluralism, Participation and Party Websites*. Party Politics, 9 (1),* 21-45.

Römmele, A. (2003). Political Parties, Party Communication and New Information and Communication Technologies. *Party Politics, 9 (1),* 7-20.

Scott, J. K. (2006). “E” the People: Do U.S. Municipal Government Web Sites Support Public Involvement?. *Public Administration Review,* May/June, 341-353.

Setälä, M. & Grönlund, K. (2006). Parliamentary websites: Theoretical and comparative perspectives. *Information Polity (11),* 149-162.

Sudulich, M. L. (2007). Political Parties online: an analysis of party organization and ICT. ECPR Pisa, September 2007.

Taylor, J.A. & Burt, E. (1999). *Parliaments on the web: learning through innovation. Parliamentary Affairs, 52*, 503-516.

Vaccari, C. (2008). Italian parties' websites in the 2006 campaign. *European Journal of Communiation*, spring 2008.

Van Os, R. (2004). Portrayal of Europe on Web sites of political parties: Political parties’ qualifications of Europe in the context of the 2004 EP election in France. 7th conference of the European Sociological Association Toru, Poland, 9th-12th September Research Network Sociology of Mass Media & Communications.

Quality of Democracy:

Berg-Schlosser, D., (2004). The Quality of Democracies in Europe as measured by current indicators of democratization and good governance. *Journal of Communist Studies and Transition Politics, 20(1)*, 28-55.

Bollen, K. A. (1990). Political Democracy: Conceptual and Measurement Traps. *Studies in Comparative International Development, 25(1),* 7-24.

Bollen, K. A. & Paxton, P. (2000). Subjective Measures of Liberal Democracy. *Comparative Political Studies, 33(1),* 58-86.

Diamond, La. & Morlino, L.. (2004). The Quality of Democracy. An Overview, *Journal of Democracy, 15(4),* 20-31.

Morlino, L., (2004). What is a 'good' democracy?. *Democratization, 11(5),* 10-32.

Munck, G. L. & Verkuilen, J. (2002). Conceptualizing and Measuring Democracy. Evaluating Alternative Indices. *Comparative Political Studies 35(1),* 5-34.

Other Related Literature

Bennett, W. L. (2003). New Media Power: the Internet and Global Activism. In Couldry, N, J. Currad (Eds.). *Contesting Media Power: Alternative Media in a Networked World*. (pp. 17-37). Rowman and Littlefield Lanham: MD.

Bentivegna, S. (2002). *Politica e nuove tecnologie della communicazione*. Roma-Bari: Laterza.

Chandler, D. (1998). Personal home pages and construction of identities on the web. Retrieved from http://www.aber.ac.uk/media/documents/short/webident.html

Hine, C. (2000). *Virtual Ethnography*. London: Sage.

Hine, C. (Ed.). (2005). *Virtual Methods: Issues in Social Research on the Internet*. Oxford: Berg.

Hoff, J., I. Horrocks & Tops, P. (2000). Introduction: New Technologies and the 'Crises' of Democracy. In J. Hoff, I. Horrocks & P. Tops (Eds.). Democratic Governance and New Technology. Technologically Mediated Innovations in Political Practice in Western Europe. (pp. 1-10). London: Routledge.

Kavada, A. (2006, October 20-22). *The 'alter-globalization movement' and the Internet: A case study of communication networks and collective action*. Paper presented at the Cortona Colloquium 2006–Cultural Conflicts, Social Movements and New Rights: A European Challenge, Cortona, Italy.

Koopmans, R., & Zimmermann, A. (2007). Visibility and communication networks on the Internet: The role of search engines and hyperlinks. In C. De Vrees & H. Schmidt (Eds.), *A European public sphere: How much of it do we have and how much do we need* (pp. 213-264). Mannheim, Germany: Connex.

Pickerill, J. (2004). Rethinking political participation: Experiments in Internet activism in Australia and Britain. In Gibson, R., Roemmele, A., & Ward, S. (Eds.), *Electronic democracy: mobilisation, organisation and participation via new ICTs* (pp.170-193). London: Routledge.

Sey, A. & Castells, M. (2006). De la política en los medios a la política en Red: Internet y el proceso político. En Castells, M. (Ed.). *La sociedad red: una visión global.* (pp. 440-461). Madrid: Alianza.

Stalder, F. (2005). *Open Cultures and the Nature of Networks*. Sarajevo: New Media Center.

Subirats, J. (2002). The dilemmas of an inevitable relationship: Democratic innovation and the information and communication technology. In J. Jordana (Ed.), *Governing telecommunications and the new information society in Europe* (pp.228-250). Cheltenham, UK: Edward Elgar.

Trechsel, A., Kies, R., Mendez, F., & Schmitter P. (2003). *Evaluation of the use of new technologies in order to facilitate democracy in Europe: E-democratizing the parliaments and parties of Europe*. Retrieved from http://www.erepresentative.org/docs/6_Main_Report_eDemocracy-inEurope-2004.pdf.

Wakeford. (2000). New media, new methodologies: studying the web. In Gauntlett, D. (Ed.). *Web.studies: Rewiring media studies for the digital age*. London: Arnold.

Vedel, T. (2003). Political communication in the age of the Internet. *Routledge Research in Cultural and Media Studies,* 10, 41-59.

Zurawski, N. (2006). Review: Hine, C. *Virtual Methods: Issues in Social Research on the Internet.* Oxford, UK: Berg Publishers, 2005. CyberCulture Studies: RCCS.